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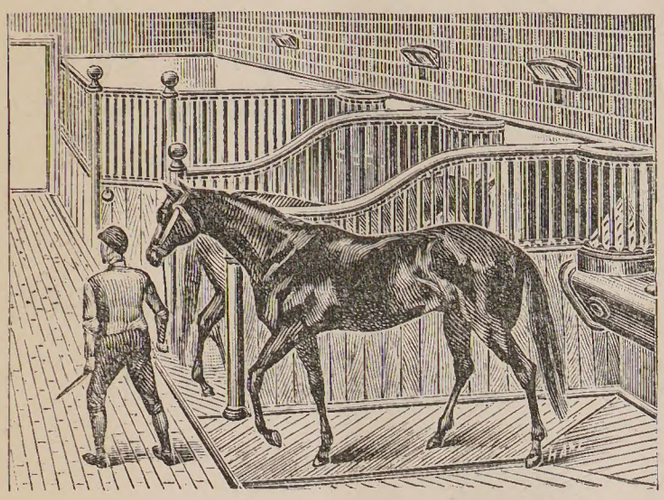

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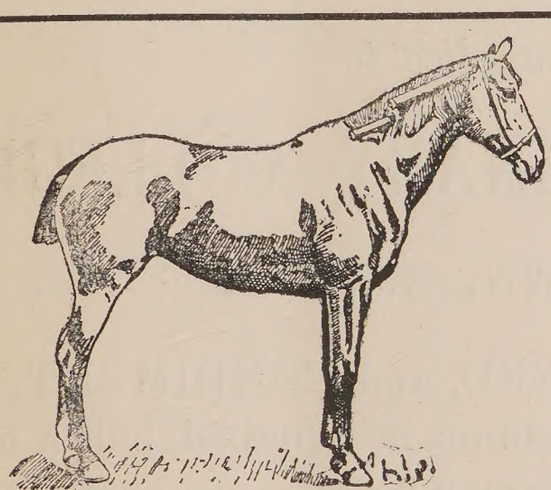

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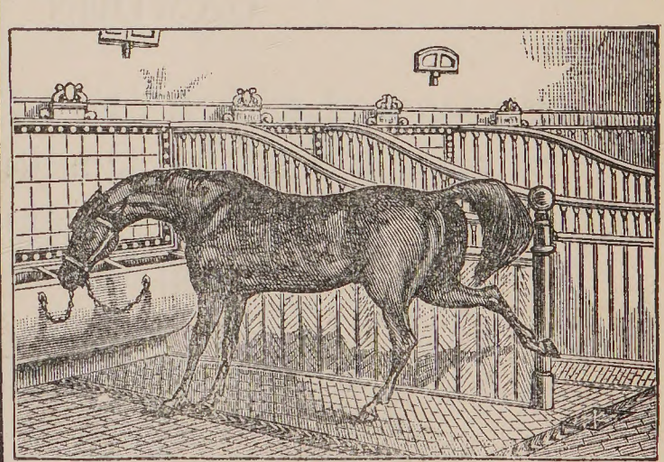

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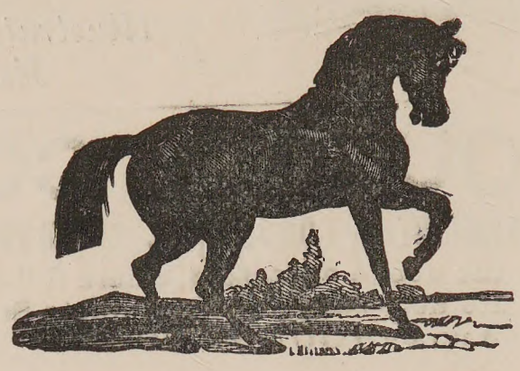

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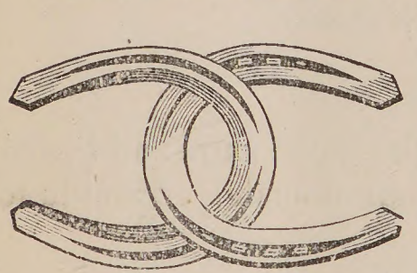

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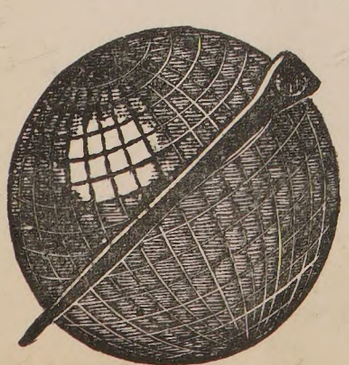

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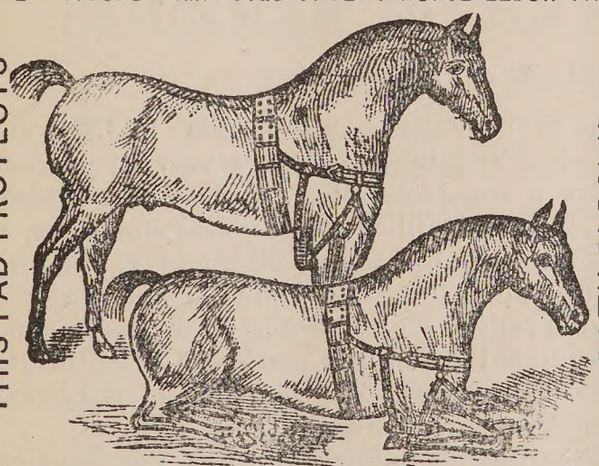

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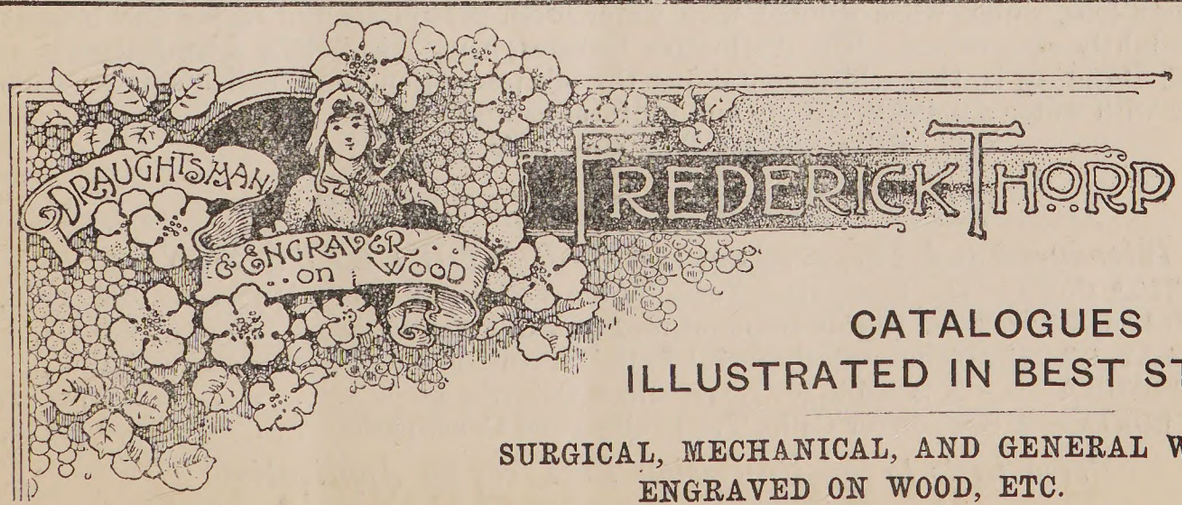

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VOL. LXVIII. No. 806. FEBRUARY, 1895. Fourth Series, No. 482.

Communications and Cases.

THE PRESENT POSITION OF THE QUESTION OF IMMUNITY.*

By Jno. A. W. Dollar, M.R.C.V.S., London.

It is with very great pleasure that I again find myself standing at the rostrum of this, the oldest of all the veterinary medical societies of England. For more than seven years I have been a stranger to it; and when I think of the great advances which have been made, especially of late, in the conduct of teaching at this College, I must confess that it is with some trepidation that I take up the thread of my discourse. As there are amongst you both those who are just entering on their professional careers, as well as those who are shortly to bring to an honorable conclusion their long years of study, I hope you will excuse me if, in the first place, I spend a few moments in making clear the fundamental principles of the subject I have to speak on.

I need scarcely say that it demands for its proper understanding a slight knowledge of physiology. Blood may be roughly divided into two parts—the liquor sanguinis or plasma, and the red and white corpuscles. It is very necessary to clearly keep in view these two constituents, because around them rages at the present time the whole contest of the nature of immunity. The liquor sanguinis is a liquid holding in solution certain proteid bodies and salts with which I need not here trouble you, but into the characteristics of the white corpuscles we must go a little

* A communication made to the Royal Veterinary College Medical Society.

more deeply. The white corpuscles consist of small, more or less spherical masses of protoplasm, capable of performing amœboid movements—that is, of thrusting out and withdrawing processes or masses of their substance, and containing one or more nuclei. Metschnikoff, who has carefully studied these, distinguishes several varieties. There are, firstly, the small white corpuscles with single large nuclei, which occupy nearly all the cell, and which have been termed lymphocytes, on account of their being formed in large quantities in the lymphatic glands. Then there are the mononuclear leucocytes, which greatly resemble lymphocytes, but attain a greater size, and whose single nucleus colours less readily with aniline dyes. Some of them closely resemble endothelial or spleen pulp-cells. The third variety are the eosin leucocytes of Ehrlich, which have an irregular-shaped nucleus, and contain many large granules which stain readily with eosin. The fourth variety, the most important both in quantity and functions, are the polynuclear leucocytes, which contain several nuclei. Of these varieties the lymphocytes and eosin leucocytes seem to play little or no part in destroying bacteria, but the mono- and poly-nuclear leucocytes possess very marked phagocytic or bacteria-destroying properties. Even outside the living body these amœboid cells are able to take up foreign particles very readily, and they may sometimes be seen perfectly crammed with them. It is to the presence of such cells in the body that Metschnikoff attributes its power of resisting disease. In other words, he regards immunity as due to the power possessed by the cells of destroying bacteria. In 1892 he published a work on inflammation, in which he dealt very thoroughly with this subject. He there likens the struggle which occurs between the leucocytes and bacteria to a veritable battle. The body is a great fortified country enclosed within walls of epithelium. Should a breach occur at any point, and the outside army of bacteria effect a lodgment, the irritation caused by their presence attracts to the spot vast regiments of leucocytes. The blood-vessels, which are the canals and rivers of the body, affording communication between all parts, become dilated, the stream slows, and at the dilated spot countless thousands of white blood-cells become stationary, adhering to the walls. The troops are disembarking. Soon they pass through the blood-vessels into the tissues beyond, and, attracted by the life products of the bacteria, rapidly make their way towards them. The struggle then commences.

If the leucocytes are victorious, recovery results—in other words, the animal possesses immunity against that disease. If, on the other hand, the bacteria triumph, they gradually advance into the tissues, and if not stopped by some second line of defence they defeat the defenders in detail, and either by their mechanical presence, by their taking up the oxygen necessary to the life of the tissues, or (and this is by far the most frequent method) by their elaborating deadly poisons in the blood, they paralyse the nerve-centres and bring about death. That is a very free word-picture of the process of infection. You must not be led to suppose, however, that everything is so simple as might at first appear, and in point of fact a vast number of objections have been raised to Metschnikoff's theory which have called for years of patient work to explain or disprove, and which still leave it in the position of only partially explaining the sum-total of facts. As time advances, however, the irreconcilable facts grow smaller and smaller in number, and it was with the object of recording his latest advances that Metschnikoff, at the Budapest Congress, read the paper whose salient points I shall shortly try to lay before you.

The two principal theories to account for immunity are that of Buchner, termed the humoral theory; and that of Metschnikoff, termed the cellular theory. Metschnikoff's ideas have been already sketched; Buchner's theory is entirely different. Whilst Metschnikoff attributes the principal duty of defence to the white blood-corpuscles, Buchner lays it on the blood-plasma. His ideas received some confirmation from the fact that normal blood-serum seems in many cases to possess the property of killing bacteria. When Behring and Kitasato made the further discovery that serum from animals which had just recovered from certain diseases had the power both of killing bacteria and also of rendering inert their poisonous life products, it certainly seemed that Buchner's ideas had received powerful support. But, as I ventured to suggest in a paper read to the National Veterinary Medical Association in the summer of this year (1894), it is very necessary to remember that serum is an entirely artificial product; that the white blood-corpuscles contribute in a very important degree to its formation, and that any protective material contained in the leucocytes might well be rendered up to the serum during the process of coagulation. There would thus be nothing surprising in our finding protective materials in the serum, even though we absolutely denied their presence

in the plasma. According to Buchner's theory we imagine to ourselves that the microbes which enter the body are submitted to a more or less destructive action by the natural fluids, such as the plasma of the blood, the fluid of exudates, and the aqueous humour. If these fluids kill the microbes, the individual remains unaffected, and the microbes destroyed are simply picked up and carried off by the leucocytes. If, on the other hand, the fluids are incapable of destroying them, the microbes develop freely in the body, and the animal enjoys no immunity. Neither at the London Congress nor during the last three years has anyone been able to furnish a single example of that action of the fluids in the animal body. But, on the other hand, a large number of facts have been collected which seem actively in opposition to this bactericidal theory. I need only quote the example given by M. Stern of the bactericidal action of the human blood on the bacillus of typhoid fever. Though well marked in the blood of normal individuals, this action is greatly diminished in that of persons cured of the disease. The result, then, in this case is diametrically opposed to immunity. In face of these facts, Herr Buchner has found it necessary to modify his theory. In his last writings ('Münchener med. Woch.,' 1894) he formulates the following idea. The bactericidal property of the blood is principally due to leucocytes which secrete substances termed alexins, capable of destroying microbes. If during an infectious process inflammation is produced, the leucocytes assemble not only to engulf the dead microbes, but primarily to supply the microbe-destroying fluid. As this assemblage of mobile cells only occurs in consequence of their sensibility, it will be seen that Herr Buchner's latest idea is no longer a simple humoral theory. Immunity is not due to the bactericidal action of fluids, which is a purely passive function, but is owing to the active intervention of leucocytes which hurry to the field of battle to discharge their alexins. Herr Buchner's theory has, therefore, become a cellular theory framed to agree with the old theories of immunity. In this change of view Herr Buchner was preceded by other workers. Three English authors, Messrs. Hankin, Kanthack, and Hardy, had already formulated ideas which tended to reconcile the two opposing theories of immunity. They admitted that the bactericidal alexins were secreted by leucocytes whose nuclei stained readily with eosin. These I previously referred to as eosin leucocytes. The processes thrust forth by these cells are sup-

posed to kill the microbes, which are afterwards surrounded and dissolved by another variety of leucocyte, which I shall term simple leucocytes. In contradistinction to the former, they do not readily stain with eosin. This theory has, however, been finally refuted by M. Mesnil, who, during the course of a research carried out in Metschnikoff's laboratory, and not yet published, has shown that in certain bony fishes, and especially in the perch, there is a complete want of these eosin leucocytes, and that in spite of this fact the destruction of micro-organisms is effected just as well by the phagocytes as in animals possessing the greatest quantity of eosin leucocytes. Certain experimenters, who saw that the microbes were not destroyed by the bodily fluids of refractory animals, suggested that these fluids were only sufficient to *attenuate* the bacteria.

M. Savarelli's investigations published in 1893 have shown that this attenuation is non-existent, and that the phenomena which gave rise to the idea depend on a protective power resident in the serum of vaccinated animals. A series of experiments have been carried out in M. Metschnikoff's laboratory on the microbe of swine fever, on the pneumococcus, and on the vibrion of cholera, all of which tend to the same conclusion. At the time of the London Congress, Herr Behring's discovery of the antitoxic properties of the serum of animals vaccinated against tetanus and diphtheria was already known and unanimously accepted as one of the greatest discoveries of these latter days. But its application to the theory of immunity had scarcely commenced. Soon after the Congress the work of Herr Klemperer appeared, which attempted to explain the immunity which follows fibroid pneumonia on the basis of the presence of antitoxins. Herr J. Klemperer became one of the most ardent adherents of the theory of the antitoxic powers of the serum, and also applied it to human cholera. There is no need for my insisting at length on the untenability of that theory so far as it relates to immunity.

M. Issaeff has shown that even the acquired immunity of rabbits to the pneumococcus, the basis of Klemperer's theory, could not be attributed to any antitoxic influence of the bodily fluids. The further the study of this phenomenon has been pushed, the more facts have been found irreconcilable with the antitoxic theory. I ought to especially mention here a long series of experiments made by MM. Roux and Vaillard, who have repeatedly proved that in animals and in men, *who are far from being*

refractory to tetanus, the bodily fluids can become strongly antitoxic.

The discoverer of this quality of the serum, Herr Behring himself, has been led by these minute researches to conclude that immunity to tetanus resides in the properties of the body-cells. Herr Behring distinguishes true immunity or active immunity from temporary or passive immunity. The first and most durable form of immunity is at present attributed by Behring to a function of the cells, and it is only that passive immunity, produced by injecting the fluids of a vaccinated animal into a fresh one, which Behring views as purely humoral. According to his view, it is simply a question of transferring a portion of the acquired immunity to a normal animal by means of the serum of the blood. This passive immunity—that is to say, the prevention of infection by means of body fluids—has been confirmed in the case of a large number of diseases. It was early noticed that a preventive action of the blood could exist entirely separate from any antitoxic property whatever. A study of the phenomena occurring in the process of immunisation show that it is due to the protective serum producing a stimulant action on the individual treated, and especially on his cellular elements. It is proved that under the influence of the protective serum an active leucocytosis occurs, and as a rule a well-marked cellular reaction. This idea of a stimulant action produced by protective fluids has been confirmed by several series of experiments, some carried out in the school of Herr Koch.

R. Pfeiffer and Wassermann studied it in connection with the choleraic peritonitis of guinea-pigs, whilst C. Fränkel and Sobernheim applied the idea in dealing with the disease. Amongst such work I ought especially to mention that of M. Issaeff made at Koch's Institute at Berlin. He showed that choleraic peritonitis in guinea-pigs could be prevented by previously injecting liquids which stimulate the leucocytes. Ordinary nutritive bouillon, although itself an excellent culture fluid for the cholera vibrion, yet exercises this action. One sees, then, after all that has just been said, that the supporters of the humoral theories have in most cases been obliged to abandon their first point of view, and to approach more or less closely to the cellular theory of immunity.

At the close of a very circumstantial review, which was at once a model of moderation and impartiality, Herr Stern spoke of the present position of the question in the

following terms:—"The purely humoral conception of immunity is in most cases insufficient. It is precisely our study of the action of the blood and fluids free of corpuscles which forces us to admit that immunity is in most cases due to a change in the cells themselves or in their functions" ('Centr. f. alg. Pathol.,' 1894, p. 263).

Here, then, is the principal advance made in the study of immunity since the London Congress. The only theory which remains is the cellular one, and the divergences of opinions on this are much easier to reconcile. Immunity reduces itself to a question of the sensibility and activity of the cellular elements of the organism. But it is necessary to ask what variety of cells play the principal part, and how the cells act in producing immunity. We have seen that even Herr Buchner now attributes an important character to the leucocytes in immunity.

Another member of the Munich School—M. Emmerich—speaks in his last article ('Münch. med. Woch.,' 1894, p. 622) of the leucocytes as the sources of an active albuminoid substance which affects the cure. Only, in these presentments, the intra-cellular absorption and destruction of the microbes play no part. It is the theory of phagocytosis which attributes such great importance to these functions of the cells. Can we, then, consider this theory as satisfactorily explaining the many new facts observed during the last three years. Formulated eleven years ago—that is to say, much before the humoral theories which we have analysed—the theory of phagocytosis has met with many objections, and has surmounted a succession of storms produced by the discovery of chemical vaccination, of the bactericidal property, and of the antitoxic power of the bodily fluids. All these facts, and many others in addition, appeared at first to be insurmountable obstacles, and yet the theory of phagocytosis examined more closely has proved in no way disturbed by them.

Whilst the study of the bactericidal property of the bodily fluids has been principally made outside the body, the phagocytic functions of the cells have, wherever possible, been studied within the living tissues. In this way it has been shown that the phagocytes enclose the microbes with a rapidity previously unsuspected. M. Werigo has demonstrated that the majority of bacteria injected into the blood in rabbits are surrounded by the cells immediately after injection, and can be found in the phagocytes at the end of a few minutes. M. Borrel has confirmed this fact for the bacillus of tuberculosis, of which the

greater part are taken up by the lencocytes a few minutes after intra-vascular inoculation. These results show that microbes which enter the body are seized on by the cells with extraordinary rapidity, and subjected to the direct action of the fluids, thus supporting the view of the pre-eminent action of the phagocytes. This last conclusion is again confirmed by the generality of the phagocytic phenomena in immunity. Previously it seemed possible that the phagocytic action was a rule having more or less numerous exceptions, a fact which does not appear astonishing considering the complexity of biological phenomena. But the more one studies this question the more one becomes convinced of the generality of phagocytosis. Even in the most toxic of diseases, like tetanus and diphtheria, the phagocytic reaction plays a great part. M. Karlinsky has shown that bacteria injected into the bodies of snails disappear in a very short time, and that media sown from the point of inoculation and from the blood give no cultures. This fact has been cited as an objection to the theory of phagocytosis. Herr Lubarsch has supplied a further one concerning the crustaceæ. In these animals the injection of bacteria into the circulation is followed by their rapid disappearance. M. Kowalevsky, the celebrated zoologist, has lately replied to these objections. He considers that the facts discovered by Herrn Karlinsky and Lubarsch are correct, but their interpretation is erroneous. In reality the disappearance of bacteria from the circulation is in no wise due to their destruction, but simply to their enclosure by phagocytes localised in certain organs, which might be compared to lymphatic ganglia, or to the spleen of Vertebrates. In snails the enclosed bacteria remain living and virulent for forty-eight hours, and in crayfish for as long as four days. I have touched on these facts because the phenomena of phagocytosis in the lower animals constitute the basis of the entire theory.

(*To be continued.*)

CASTRATION.

By R. Spooner Hart, Calcutta.

In November last I had the pleasure of listening to a discourse upon the above subject, and having had a very large varied experience, I was thoroughly interested.

Among other things, reference was made to the "*stand-*

ing operation," and it was the leading topic of the controversy which followed. The essayist informed us that the horse or colt to be operated upon was to be taken into an ordinary stall, and with only a twitch on its nose, and with no restraint upon the legs, the testicles were to be removed, the emasculator standing behind him. To a practical horseman the very idea of standing behind a young, or even an old animal for the matter of that, fills one with awe, especially should the animal be a strange one. Few men, I am convinced, are prepared to run such a risk as must necessarily be taken in the standing operation. In fact, with my experience among the class of animals with which I have had to deal, the upright operation reads to me like a "fairy story;" and beyond being a "new thing," I fail to see what it has to recommend it in preference to the old method. I submit that it is not practicable for general use, and only applicable to very few cases. There is no difficulty in removing the testicles in a clean, uncomplicated case with no adhesions, whether the animal be standing or lying; but the question is, will the animal stand quietly while such a painful operation is performed? You cannot pick your subjects, and you have no means at your disposal whereby you may infer whether the animal will stand or not during the operation, and the success of the operation depends upon the option of the animal. I opine that few surgeons who take pride in their work and precision in operating would care to substitute, for a simple and positive plan, an operation which is doubtful in its results, and it would not be sound surgery so to do. Remember the proverb, "Never quit certainty for uncertainty." In operating upon so sensitive a part the pain is necessarily most excruciating, and it is unreasonable to expect animals to quietly submit. Look at the evidence of pain which many of the minor operations cause, and how our patients resent it! How much more, then, must the pain inflicted be in castration?

The charm in the use of chloroform on man, it suffices to say, is twofold. Firstly to the patient, rendering him immune to pain; and secondly, in placing the subject under complete control. I submit, with all due deference to the opinions of others, that, in the performance of painful operations, occupying some time, it is good surgery to have our patients under safe restraint—not only for the proper execution of the operation, but also for the safety of the surgeon.

I question very much, indeed, whether an assurance

company would undertake the risk, at ordinary rates, t assure the life of a professional emasculator, practisin g the standing operation; and in the event of the assured person meeting with fatal injuries, would not the company question the right of paying the policy? It would be little short of suicide to stand behind the very large majority of animals whilst making an incision in the scrotum. Look at the number of horses that will not even permit their flanks to be touched, and the difficulty experienced, in many instances, in examining the yard! Recall the struggling which takes place when the animal is being castrated, under proper restraint when cast; making the incision, in nine cases out of ten starts them off, and it often takes us all our time to hang on and guard against injury. There are thousands of horses in the world that would smash you to pieces while operating upon the scrotum in the standing position before going any further, and any surgeon attempting such would be running an unwarrantable risk, with every prospect of having ultimately to cast the animal to complete the operation. With animals of all ages that I have had to deal with for many years past, had I adopted the standing method of operation I am convinced I should not have been here to-day penning these lines.

As already observed, it is unreasonable to expect animals to stand calmly and allow such a painful operation to be performed; and, in those comparatively few instances in which it has been done, the animals must have been built of different material from the common run.

By non-advocacy of the standing operation I feel convinced that I am but voicing the opinion of every practical member of the profession, and that it is an operation which cannot recommend itself. I cannot see its virtues over the old method, but at the same time I perceive many drawbacks which must attend it. One of the most important is the risk of infliction of unnecessary and prolonged pain should the animal become restless after beginning the operation. This alone should be sufficient to cause any man to hesitate before adopting this new plan.

Owing to the kindness of a practitioner, I am acquainted with the facts relative to a standing operation which took place quite recently. The poor unfortunate subject lay down three or four times during the operation, and on getting up the exposed testicle and the scrotum were covered with bedding and dirt. There was great delay before the testicles were finally removed, and the animal

was subjected to prolonged pain and suffering. Heavy bleeding also ensued. Is this surgery and the regard we have for the rights of animals? What possible condition could be more *infra dig.* to a surgeon and unprofessional-like than to see a horse standing with testicle exposed, bleeding, and refusing to permit further interference? The sooner such proceedings are abandoned in this and similar operations, and the curtain allowed to fall upon acts of wanton cruelty, the better. It will enhance our reputation as professional men and humanitarians.

Why the cruel clam continues in use, in the face of abundant evidence that it is unnecessary, and that other modern methods exist more effectual and a hundredfold less painful, is an enigma. To put a clam on for twenty-four or forty-eight hours must be productive of the most cruel suffering, and the benefits must be extremely doubtful. Beyond being that "it was my father's custom, and so it shall be mine," I cannot see what it has to recommend it,—that is, if this last be a recommendation. I do not wish to imply that the old practitioners wantonly inflicted pain, but the clam was used formerly through ignorance of a better substitute, and which now exists. Nature's own hæmostatic is much more reliable and trustworthy in emasculating than the use of any instrument I have used or seen used.

The question was asked, "What would you do in a standing operation should heavy hæmorrhage follow? *Answer.*—"Secure the end of the cord, and cut it off with a Blake's castrator." Granting that the animal would allow of this lengthy interference, it is easier said than done, more particularly so if the cord had been divided high up and had receded. Even when the animal is on the ground, the cord is found and brought to view only after some difficulty; especially is this the case if it has receded far, and the vascular part divided from the non-vascular before removing the testicle. I question the propriety in such a case of again using the Blake castrator; would it not be better to apply a ligature? In operating I always divide the cord high up to keep it clear of the scrotal incision, and this precaution is particularly valuable when operating upon aged animals. In this class of patient not infrequently we find an inch or two of cord projecting through the incision in the scrotum (if cut low), and such a condition is liable to be followed by thickening, much more so than if left up inside. Moreover it delays recovery.

Some time ago I gave the "écraseur" a good trial. I

was using it one day in the presence of one of our leading surgeons here, a skilful operator, and a man of great experience. He remarked, "You will soon get sick of the écraseur," and truly enough I had to abandon it in consequence of profuse bleeding in several cases following its use.

In castration I do not advocate the use of many instruments,—in fact, the fewer the better. The majority of instruments now in general use may be dispensed with as unnecessary.

For some years past I have adopted a very simple method in emasculating, assisted only by a scalpel and my fingers. I first cleanse the parts and lubricate the yard, then with an ordinary clyster-pipe syringe the region well with phenyl water. Before incising the scrotum I dip my hand and knife into a solution of phenyl, then expose the testicle, seize it with the left hand, and divide the non-vascular part of the cord, when all dragging ceases. With the testicle in the left hand, and keeping a steady tension on the cord with the index finger and thumb of right hand, I manipulate the cord in such a manner as to break down the delicate tissue of the part. The artery will lengthen out from the strain upon it, and it will be left alone, exposed and stretched. Now twist it around the index finger of left hand, tear through, and let go. The vascular part of the cord is very delicate, and if care be not exercised the testicle and the whole parts will tear out. In old subjects, should the tissue not give way readily on manipulation, one or two rapid up-and-down light strokes with the sharp edge of the scalpel will suffice to expose the artery, care being taken not to nick it with the knife. I have operated upon very great numbers of all ages (mostly from five to eight years) by this method, and I have no reason to regret it. As compared with other methods, it is much more readily and rapidly executed, occupying an almost incredibly short time; causes less pain; recovery is rapid, and the risk of hæmorrhage a minimum. Emasculation in Bengal is sometimes attended with heavy mortality from tetanus, the method of operation making no difference. I remember once to my cost losing twenty-four out of 103, on another occasion three out of five, and a remedy had to be found for this. Whilst travelling in the Punjaub I saw native horse-dealers docking horses with impunity, an operation I should not care to attempt in Calcutta for fear of lockjaw. Seeing this, it occurred to me that I could castrate without risk in this

district, and I did so for some time without losing a case so long as the animals remained there. After a couple or three weeks had elapsed since the operation, the horses were entrained for Calcutta, being about five or six days and nights *en route*.

I have witnessed an occasional case of tetanus occur among them three or four days after arrival. *En passant*, I may here mention that the climatic conditions of the Punjaub are greatly at variance with those of Calcutta. At the latter city outbreaks of tetanus are common, it visits us in fits and starts, and the death-rate is often very high. To perform any operation during the prevalence of such outbreak would almost certainly be attended by fatal consequences.

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PROFESSIONAL EXAMINATIONS.

On another page will be found the names of the veterinary students who passed their professional examinations in December. The list is a short one—shorter, probably, than it has been in former years. This does not necessarily point to a falling off in the number of veterinary students, or to any want of efficiency in the schools. It simply means that no student, if he can avoid it, will go up for examination in December. The beginning of the academic year is in October. It is then that fresh men intending to qualify for the profession begin their studies, and the first examination that is available for them is in May at the close of the winter session. In former years it was not unusual to find a considerable number of freshmen coming up to the schools in January to begin their studies, under the misapprehension that a new course of lectures began after the Christmas examinations were over. Students joining at that date could not have attended a full course of instruction, neither could they be examined until the end of the year, and on their account an examination at Christmas was necessary.

The disappointment of such students was frequently great when they discovered that they had mistaken the time for joining the College, as in most cases it happened that they could have joined three months earlier had they

known. Now that there is a statutory entrance examination, and that intending students are warned of the disadvantage of joining the colleges at any other time than the beginning of the winter session, the result is that practically no students now join the colleges in January. As regards such students, therefore, the need of a Christmas examination has ceased. The only others for whom a Christmas examination is of any use are those who fail at the proper examinations held at the end of the winter session in May. According to the bye-laws a student failing to pass must attend classes at a veterinary college for a term before he is eligible to appear again for examination. It thus happens that as there is no summer session, a student who fails in May is required to attend the classes where the subjects of his examination are taught during the first three months of the following winter session, and he comes before the examiners again at Christmas.

Should he succeed in passing at that time he finds himself in a most unfortunate position. He has now to enter on a new course of studies, and for that purpose he must make his first appearance in the requisite classes which have been at work for three months. He finds his former fellow-students there already masters of the difficulties which meet those beginning a new study with a new vocabulary, and provided with what may be called a chart to guide them to the haven of their hopes—the pass list in the May examinations. The difficulties which meet the student so situated are sufficient to dishearten even the ablest. He is not permitted to go up for examination in May, even if he were by means of great exertion to recover lost ground and be ready for it. He must sit in his classes and listen to much that he does not understand. At the close of the session he sees his fellow-students go up for examination, but he must wait for seven months. He returns to college once more, to associate with his juniors and repent the miserable experience of the former year. It were better that he avoided the Christmas examination altogether, and went to see practice for nine months, and resumed his studies at the beginning of the next winter session, thereby losing a year. The vain struggle to regain lost ground by means of a December examination is chiefly responsible for the production of that unfortunate class of students who lose heart and disappoint the hopes of those who looked forward, not without good reason, to attaining a position of usefulness, or even of eminence, in the veterinary profession. Were it possible for a student who,

from illness or other cause, was unable to attend the May examinations, but who passed in December, to recover lost ground by passing his next examinations at the close of the session in May, that would be some justification for holding an examination at that time. But according to the present regulations that is impossible, for a session of thirty weeks must intervene between the examinations. Looked at from any point of view, the December examinations are a mistake. The teaching staff of the various colleges can supply abundant evidence of the mischief they have wrought among the students.

But the evil is not confined to the manufacture of *chronics*, as they are facetiously called. It has a wider range. The presence in a class of a number of students of a former year who have failed to pass their examination has an injurious influence upon the younger students, tending to produce idlers. It has also a distracting influence upon the teacher, who, finding himself addressing students in different stages of progress, is impelled by a natural desire to assist the less fortunate who have the ordeal of an examination immediately facing them, and this cannot be done without in some measure depriving the younger students of the fulness of the elementary training to which they are entitled. The work of the classes becomes to some extent disorganised. The holding of special revising classes for the benefit of the few is another source of disorganisation, and puts an additional strain upon the teachers, whereby the vigour of their proper work is caused to suffer.

Now that the term of office of the present Board of Examiners is drawing to a close, we hope the Council will take this subject into their serious consideration, and effect a change by means of which this evil may be removed.

We would humbly suggest that the bye-law requiring a student who has failed in his examination to attend the classes where the subjects comprised in it are taught should be abolished. It would then be possible to hold an examination at the beginning of the session instead of in the middle of it. If the December examination were abandoned, and an examination held in the latter half of September to enable students who had failed in May to pass in the subjects they had been studying during the previous winter, those who passed that examination would be able to proceed to their next department of study as if they had passed in May. They would then be able to take up their new subjects from the beginning, and work alongside of those with whom they had been formerly associated.

They would thus not lose time nor heart nor self-respect, and the other evils complained of would be at an end. They would be able to compete for the class honours in their various classes, for they would have the opportunity of attending the class examinations from the beginning of the session, and not be entirely debarred from so doing as they are under the present arrangement.

There can be no objection to such an arrangement on the score of expense. On the contrary, to the student who succeeds it is the saving of the fees of a term of three months. To the student who fails it may also prove a still greater saving, inasmuch as he may discover all the sooner that it is inexpedient for him to continue in a career for which he is unfitted.

It may be objected to this method that the student is deprived of any further tuition after his failure, and that he will find himself in September even less fit to pass his examination than he was in May. It is the evident intention of the bye-law to provide against that contingency.

We venture to think that the experience of teachers will lead them to believe that there is little force in that objection. A course of lectures is as much directive as instructive, and in these days of excellent class-books what a student stands most in need of is direction as to how and what to learn. The business of the teacher is to guide the student along the lines of his work, to give him a chart to steer by, to illustrate and demonstrate and teach the student how to apply his knowledge.

Any student who has attended such a course is provided with the means of acquiring knowledge of the right kind in the right way, and he ought with the aid of his books and his notes to acquire the requisite amount of knowledge which will stand the test of an examination. On the other hand, students who have been idle, inattentive or irregular may be regarded as not yet having begun their studies ; and for them nothing can be better than that they should begin their work *de novo,* and become real students for the first time. To endeavour by means of a system of cram condensed into a few weeks to enable a student to scrape through an examination for which he is not fitted on the ground of real applicable knowledge, is to frustrate the end for which schools are established and examiners appointed.

Reviews.

Précis de Toxicologie vétérinaire. By Prof. G. Mosselman and M. G. Hebraut. Brussels, H. Lamertin, 20, Rue du Marché-au-Bois. 395 pp., 23 illustrations.

The authors of this work on veterinary toxicology are already well known, to French-speaking practitioners at least, by their numerous brochures on toxicological and bacteriological subjects. The present volume collects into a readable space the subject-matter of their previous writings, and the value of the work is greatly increased by the trouble which the authors have taken to consult periodical and standard literature. All the best French writers on toxicology, both human and veterinary, have been laid under contribution, and in some instances German authors also.

The book opens by noting the earlier uses of poison, and tracing the progress of the struggle which has always been going on between the poisoner on the one hand and the analytical chemist and pathologist on the other. This by the way. To the pathologist interest commences at p. 20, where the ætiology of poisoning begins to be dealt with, and the vehicles of poison and the channels through which it enters the system considered. Chapter III deals with the physiology of poisoning—a most engrossing subject, and one which has attracted a vast deal of attention, without, however, producing adequate results.

In regard to metallic poisons an ingenious theory has been propounded by Rabuteau, viz. that the metals are more poisonous the higher their atomic weights and the lower their specific heats. That is to say, the heavy metals are the most poisonous. Allowing for the comparative solubility of the various metallic salts in the blood-plasma, this law certainly seems to explain the majority of observed facts.

Recalling for a moment the constitution of the tissues, we find that, however varied the latter, they never contain much more than twelve elements, nor that any one of these elements has a higher atomic weight than 56.

Errera has shown the importance of the tissue elements being of low atomic weight. Firstly, these elements are the most widely distributed on the earth's surface, and therefore always within reach of living organisms; while their compounds, being either gaseous or very soluble in

water, pass easily through animal membranes, and are readily eliminated. Further, the molecules formed of light atoms have, like the atoms themselves, a high specific heat. Considering the great external range of temperature it is necessary, in maintaining a regular bodily heat, that each molecular combination in breaking down into a simpler form should furnish a comparatively large return of heat energy, and this can only be so where the individual atoms have a low atomic weight and a high specific heat.

By introducing into the organism bodies of high atomic weight these conditions are disturbed and vital processes interfered with. Then, again, the compounds of the heavy metals are relatively less soluble and less diffusible than those of the lighter—facts in themselves sufficient to explain the toxic effects of the salts of the heavy metals.

In dealing with treatment of poisoning the author warns us against so-called physiological antidotes, and points out, amongst others, that curare, which seems to antagonise strychnine, does not really do so; it certainly suppresses the tetanic contractions, but the anatomical lesions persist, and death occurs notwithstanding its administration.

Division II is devoted to toxicological chemistry, and full general directions are given for conducting analyses both when the class of poison is known and unknown. At the toxicological laboratory at Paris the following method is pursued in absence of all information:

(1) The blood is examined for carbonic oxide.

(2) A sample consisting of about one-fourth of each viscus is taken, and tests made for phosphorus, prussic acid, various volatile compounds, acids and alkalies, and lastly for poisonous metals—lead, mercury, and especially for arsenic.

(3) A second sample, like the above, is reserved for the tracing of alkaloids.

If the first trials fail each viscus is separately examined, but a portion is always left for control purposes.

Division III treats very fully of the duties of veterinary toxicological experts, and gives directions for the examination of living animals, the conduct of *post-mortems*, of chemical analyses, &c., and for the drawing up of a full legal report.

The second part consists of special toxicology, and is divided into three chapters. Chapter I.: Detection of elements and their inorganic compounds; Chapter II.: Gases and vapours; and Chapter III., Organic substances. These are all treated of very fully, but space forbids further

reference to them. We can recommend the work to members of the veterinary profession as one of the best on the subject at present published.

Veterinary Therapeutics and Pharmacology. By E. Wallis Hoare, F.R.C.V.S. London: Baillière, Tindall, and Cox; price 10*s.* 6*d.*

This neatly bound volume of 550 pages deals concisely with the choice and use of drugs. It is divided into three parts. Part I treats of diagnosis and the symptoms of disease in relation to therapeutics; Part II of general, and Part III of special therapeutics. A novel feature is the plan adopted in discussing the actions and uses of remedies,—that, viz., of arranging them in their relations to the physiological systems of the body, as practised by Dr. Mitchell Bruce. Many new or little used remedies, such as Sir Joseph Lister's double cyanide of mercury and zinc, resorcin, pyoktanin, chinoline, kairin, thallin, salol, ichthyol, iodol, aristol, gelsemium, thioform, chaulmugra oil, &c., are described, and their uses indicated. The author appears to have, in many instances, consulted the best standard medical works, like Ringer's 'Therapeutics,' Mitchell Bruce's 'Materia Medica,' and H. C. Wood's 'Materia Medica, Therapeutics, and Toxicology,' whilst he has assigned the place of honour in his bibliography to Mr. Finlay Dun's justly famous 'Veterinary Medicines.' The portions of his work more immediately derived from these are of indisputable merit, and it is therefore to be regretted that so much of what is good should be marred by the presence of gross errors in style and composition like those occurring on pp. 20 to 200. This portion should, for the author's sake, be at once rewritten. We need only instance a few of these oversights. One constantly recurring offence is the misuse of the words "such" and "thus." On p. 27 "thus" occurs three times in thirteen lines, and each time begins a sentence; whilst on p. 97 "such" is repeated four times in fourteen lines. These are not isolated examples. On p. 37 occurs the following heading: "The modifying effect of different species of animals on the action of medicines," which seems a little singular. On p. 55 we are told that "immediate treatment" includes "the removal of the cause, attention to dietetics, and the use of medicinal agents," and that "this is nature's third method of recovery," a statement which surely requires some qualification. On p. 60, "Derangements of the excretions of

the mouth" are treated of, whilst on p. 76 it is gravely stated that "small doses of bicarbonate of soda . . . will help to restore the normal secretion of the gastric juice, and *neutralise* excess of alkaline mucus." The intention is, of course, clear. On p. 91, "Tympanitis" (*i. e.* inflammation of the tympanic membrane) is described as equivalent to flatulent colic, tympanites evidently being meant. "Chyle in a defective condition is the cause of anæmia" is a sentence appearing on p. 114; but the following taken from p. 118 can scarcely be a printer's error:—"In this process the molecules of the muscle are mixed with the oxygen and certain elements of the plasma, and an important point to note is that when any living tissue is in combination with metabolic materials, and forming certain results, such as force and other products from them, that the molecules of this living tissue become changed or altered to a certain extent." The statement (p. 172) that "the secretion of urine consists of a filtration theory," also requires correction. It is, perhaps, scarcely desirable to note these oversights at full length, though others of a similar character appear on pp. 178, 179, 197, 200, 202, &c. In conclusion, we would congratulate the writer on his industry and happy selection of information, and hope that his work when recast, as suggested, will attain the circulation he may justly anticipate.

Abstracted Notes.

Spontaneous Cure of a Case of Roaring due to Paralysis of the Inferior Laryngeal Nerve.—A black Dutch mare, eight years old, the property of Signor Cesare Poggi-Banchieri, after a course of fever for seven to eight days, doubtless of rheumatic origin, showed unmistakable signs of *whistling*. The seriousness of the prognosis so alarmed the owner that it was decided to send the mare to the school at Pisa. Professor Vachetta confirmed the diagnosis; and not wishing to have the animal operated upon, the owner brought her back to Pistoia without attempting any therapeutic remedy, ordering her to be sent into the country.

After several months my client informed me that the mare was absolutely sound. This I could scurcely believe, but for a year her respirations have been normal, no matter to what class of work she has been put. Simple rest in

this case, which was probably either a case of neuritis or rheumatic perineuritis, sufficed for cure; but this cannot be expected when a serious degeneration has occurred as the result of a chronic state of paralysis of the inferior laryngeal nerve.

Treatment of Whistling by Intra-tracheal Injection of Strychnine.—A bay horse, nine years old, the property of Signor Severino Spinelli, of Florence, affected with paralysis of the recurrent, and a pronounced whistler, received into his trachea 5 centigrammes daily of sulphate of strychnine. The dose was increased 2 centigrammes every other day until he received a dose of 20 centigrammes. After twenty days the patient was sent back to work, there being no amelioration of his condition. He whistled as badly as he did at any previous date.—Dr. Arturo Serafini, in *La Clinica Veterinaria* (Milan).

Follicular Mange in the Dog cured by the Application of Naphthol Ointment.—Dr. Galli-Vallerio, assistant in the pathological department of the Veterinary School of Milan, mentions a case of mange of the dog due to *Demodex folliculorum* perfectly cured by the application of naphthol ointment.

The subject was a Cagnolian terrier said to be affected with an incurable mange, the disease having resisted all the usual therapentic remedies. The patient was extremely emaciated, the nose and skin around the eyes were hairless, and showed old papules and scab-like desquamations. Similar conditions were also found scattered over the sides of the neck, back, outside the thighs, and in the axillæ. Follicular mange was diagnosed, and this was confirmed by the discovery of the parasite on microscopical examination. An ointment made up as follows was immediately applied :—℞ Naphthol β, 10 parts; Sulph. Sublim., 50 parts; Saponis Verd., Adipis Pur., ana 25 parts. Daily dressings were ordered for a time, then at intervals of two or three days. Soon the number of papules and the amount of itching decreased, and the appearance of the skin improved. But when cured in one place it did not fail to reappear in the inguinal region, on the legs, and in other positions. As soon as these new centres appeared they were actively treated. By the end of June the patient, once so weak as scarcely able to eat, might be considered cured.

He concludes by observing that he does not disagree with Klisser, according to whom naphthol sets up hæmo-

globinuria followed by death; but in the latter's case the favorable action of the drug is minimised because the patient could not stand it; and putting on one side the question of skin absorption, we must take into account poisoning by the digestive tract, since the animal was allowed to freely lick the already dressed wounds.

Anyone who wishes to use naphthol ointment should not substitute vaseline for purified lard, because whilst the former opposes absorption the latter favours it.—Dal *Mod. Zooint, La Clinica Veterinaria.*

Professor ZUNTZ gave an account, at the meeting of the Berlin Physiological Society held on November 23rd, 1894 (Professor du Bois Raymond, the President, in the chair), of his researches on the measurement of the amount of blood in circulation and the work done by the heart. For the horse he found 71 to 72 c.c. of blood per kilo. body-weight per second; for the dog, as based on the consumption of oxygen, 78 c.c. These values do not correspond to the marked difference in size of the animals, but may be explained as due to the fact that the dog was experimented upon while fasting and at rest, whereas the horse was not. For a horse in complete rest the value obtained was 50 c.c. For man he estimated the value at 60 c.c. Blood-pressure falls but slightly along the arterial system, and was found to be nearly the same in the carotid and in a small branch of the facial artery. The work done by the human heart he calculated as amounting to about 20,000 kilogram-metres in the twenty-four hours. When the body is working the work done by the heart increases also, so that in the case of the horse the blood pumped out now amounted to 600 c.c. per kilo. per second, or twelve times as much as during rest. The frequency of the pulse could by work be increased fourfold, and the work done by the heart to thrice its normal amount.—*Nature.*

Milk Fever.—Veterinary Surgeon Chassaing (Pamiers-Ariège) has submitted to the *Société Centrale de Médecine Vétérinaire* a thesis entitled *La Fièvre Vitulaire* (milk fever). Messrs. Butel, Robeis, and Moussu were deputed to adjudicate.

The commission proposed to confer upon the author the silver medal, and this the Society agreed to. As the chief points brought forward by M. Chassaing we find—

(1) A remark upon the frequent error of diagnosis, the inefficiency of the treatment prescribed and often employed empirically.

(2) A statement in opposition to the opinion at present held on the subject that the presence of albumen and sugar in the urine is only of secondary importance, and that the quantity of each present has no bearing upon the gravity of the case. The author says that he has always noticed increase of urine and of sugar when the patient has had a turn for the better.

(3) According to the symptoms, he distinguishes two forms of milk fever: the first benign, during the course of which the temperature oscillates around the normal point, or is considerably elevated (equithermal or hyperthermal form); the second, always serious, has as its chief character the continual falling of the temperature until death occurs (hypothermal form).

The *hyperthermal* form appears generally twenty-four to forty-eight hours after parturition, and is characterised by dulness, heaviness, staggering gait, or may be decubitus, suppression of milk and retention of fæces. Later the patients become insensible, and are often upset by frequent periods of excitement. The temperature is 38° C., more often 39°, 39·5°, and 40°, falling to 37°, 36°, or even to 32°.

The *hypothermal* form has a more rapid course; it is marked by insensibility, coma, general paralysis, slow and noisy breathing; the temperature does not exceed 37°, and falls gradually to 35°, 33°, and 32° C. some time prior to death.

(4) Preventive treatment is a vigorous course of diet for several days prior to parturition, if the subjects are plethoric or excessively fat. Curative treatment is as follows:

(i) *Hyperthermal Form.*—Cold water to the head, dry hand-rubbings, enemata of brine, constant milking, bloodletting to the extent of 5 litres (9 pints nearly) if the temperature is above 38° C., and internal administration in ten doses, given every two hours, of veratrine, 1 gramme; caffeine, 2 grammes; arseniate of strychnine, 10 centigr. Give in the form of an electuary, the excipient being honey.

(ii) *Hypothermal Form.*—Same internal remedies (alkaloids, &c.), and subcutaneous injections of ether. Avoid bloodletting. Subcutaneous injections of ether are admirable to prevent a chill. The caffeine acts as a regulator of the heart, and the strychnine prevents coma.—*Recueil de Méd. vét.*, extracted from *Annales de Médecine Vétérinaire.*

A New Obstetric Instrument.—Cases of torsion of the uterus in the cow being very frequent in cases of dystokia,

we have thought it would be of benefit to bring before the notice of our colleagues this new obstetric instrument shown to the Société Centrale de Médecine Vétérinaire by Veterinary Surgeon H. Flocard, of Geneva. This instrument is designed to reduce a torsion of the womb without having recourse to the operation of rolling the patient. Here is a description of it. Two pieces of wood, solid, as thick as a besom handle, fixed T-wise, the vertical one being about 70 centimetres* long, the other 40 centimetres.† At the end of the longer rod, two holes 5 centimetres apart and directed in opposite directions, and through these pass two cords fixed to the limbs of the fœtus within the twisted womb. There is no difficulty in understanding how to use this instrument. Fix the cords to the limbs of the fœtus, allow the cords to pass through the holes in the stick, having taken care to so place the left that it comes out on the right side, and *vice versâ*. The above being completed, a traction is brought to bear upon the two cords by pushing the instrument with the aid of the breast into the vagina and uterus. The instrument being guided by the two cords, which are firmly held, comes without danger close up to the fœtus. The cords of the instrument are then fixed, and the instrument is made to twist in a direction opposite to that of the uterus-torsion. This small operation suffices to restore the uterus to its normal condition. It will be easy to understand that this instrument once in position will permit the operator to use a force ten times greater than he could utilise directly. This instrument should render great service whenever the obstetrician is able to fix two running knots upon the limbs of the fœtus.—*Ibid.*

Direct Reduction of Torsion of the Uterus by Laparotomy.—M. Flocard, the inventor of the instrument described above, says that during the last ten years, although he practises in a mountainous country, where torsion of the uterus in the cow is very common, on two occasions only has he been unable to use the above instrument, owing to the torsion being so pronounced. Rolling the patients gave no result, so the author performed laparotomy, and reduced the torsion directly. The operation itself is very simple. It is as follows :—Thorough disinfection of the skin in the region of the right flank, most complete antisepsis of the hands and arms of the operator, an incision through the skin and muscles of the flank 8 or 10 centimetres behind the last

* Say 28 inches. † Say 16 inches.

rib, arrest the hæmorrhage entirely, open the peritoneum, thrust the arm into the abdomen and reduce the torsion. This last operation requires a little patience, and varies slightly according to the degree and disposition of the twist. This being reduced, he applies a strong dossil suture to the skin and wound, and covers all with a sublimated compress kept in position by a bandage. He then fixes the fœtus, and delivers in the ordinary way.—*Ibid.*

Case of Metrorrhagia in the Mare.—A memoir bearing this title has been presented to the Société Centrale de Médecine Vétérinaire by the veterinary surgeon Gsell, of Montdonbleau (Loir-et-Cher). As the title indicates, it is an account of uterine hæmorrhage supervening a regular and normal parturition in a mare. The account is especially interesting when we take into consideration the treatment adopted. In February, 1893, M. Gsell was urgently summoned to a mare, five years old, with her second foal which, after a very easy foaling, had been almost immediately attacked with a continuous flow of blood from the vulva. Our French *confrère* estimated that she had already lost about twenty litres of blood. Perhaps he will permit us to believe that he was led into an error by the condition of the litter. The following treatment M. Gsell at once adopted.

1. Uninterrupted plugging (intra-uterine) with sponges thoroughly saturated with iced water.

2. Mustard stimulations upon various parts of the body.

3. Three successive injections, at intervals of ten minutes, of ·25 gramme of dialysed ergotine and ·02 gramme of arseniate of strychnine. The action of these drugs and this treatment is too well known to be recommended since they are of the best. The hæmorrhage soon stopped, and the next day he was able to remove the clots from within the contracted organ without any danger of recurrent hæmorrhage. He then thoroughly disinfected the uterine mucous membrane, and as the result of a very appropriate hygienic course of treatment there was a speedy return to health.—*Ibid.*

Dr. A. Mueller begins with an account of *Filaria* (*Spiroptera*) *gastrophila*, sp. n. (?), found projecting from the walls of a cat's stomach; this would appear to be the first *Filaria* found in a cat.

Growth of Tænia mediocanellata.—*From observations made in cases of Tapeworm* (Tænia mediocanellata).—Professor E. Perroncito was enabled to determine that the average growth amounted to thirteen proglottides a day, both for ripe and unripe parasite. In the latter case the increase in length would be almost less than half.

This shows that the maximum length-growth and general development occurs in the second month, so that while there is in the first month a daily average increase of 3 cm. in length, in the second it amounts to 14 cm. a day, while the size of the individual joints is augmented in all directions.—*Journal of Roy. Micros. Soc.*

Amœba-Enteritis.—Drs. Roos and Quincke isolated from two cases of chronic enteritis two species of *Amœbæ* which differed both morphologically and as to their pathogenic action on cats.

In one case the parasites had apparently been obtained in Sicily, and these were smaller, more transparent, and moved more actively than those of the second case. They frequently contained a large number of red corpuscles, and rarely other foreign bodies in their interior; whilst the sluggish large Protozoa of the second case, which had in all likelihood been picked up in Schleswig-Holstein, never had blood, but bacteria or food particles inside them. Even in the resting stage marked differences were observed, and a large number of inoculations on cats showed that the first *Amœba* was extremely virulent, and the second harmless. The intestines were much ulcerated, and numerous abscesses were found not only in the intestinal walls, but also in the liver. This organism is called *A. coli Lösch s. felis;* the harmless species *A. coli-mitis,* the latter being probably identical with *A. intestini-vulgaris.—Ibid.*

Protozoa in Endometritis.—Dr. J. R. Doria found in three cases of endometritis bodies which he took to be Amœbæ. They were discovered in the canal, the glands, and in the epithelial cells of the cervical portion of the uterus. These bodies could not be mistaken for epithelial cells owing to their size, for they were five to eight times as large as a red corpuscle. Those within the cells were smaller than those lying free. In shape they were spheroidal to oval. The nucleus was smaller and less easily stainable than that of the epithelial cells, and a nucleolus was not constant. In fresh preparations movements of the Amœbæ were observed.—*Ibid.*

Localisation of Alkaloids. — M. G. CHAUTRIAN distinguishes five types in the mode of distribution of alkaloids in plants, viz.—(1) In a layer of cells lying between the endosperm and the true testa (*Atropa belladonna, Datura stramonium, Hyoscyamus niger*). (2) In two layers also, to a smaller extent, in the epiderm and in the cells which accompany the vascular bundles (*Conium maculatum*). (3) In the endosperm, especially in its peripheral cells (*Aconitum napellus, Delphinium staphisagria*). (4) In all cells of the endosperm, and to a smaller extent in those of the embryo (*Strychnos nux-vomica*). (5) Apparently in the cotyledons and plumule (*Lupinus albus*).

The alkaloids take no active part in germination, but are formed in the seedling from decomposition of the albuminoids.

In *Papaver somniferum* the amount of alkaloid decreases as the seeds ripen, and this is accompanied by an elimination of nitrogen. As in the other plants examined, they are not used by the plants as nutritive substances; their main function is protection against animals.—*Ibid.*

Influence of Bacterial Association.—M. V. GALTIER, who made use of *B. anthracis, Str. pneumoenteritis-equi,* and the microbe of fowl cholera, all previously attenuated, draws the following conclusions from his experiments. Microbes which have been attenuated down to a point when they are no longer fatal by themselves, may have their virulence restored when two species are introduced into an organism. The two microbes may multiply side by side, though usually one of them disappears or tends to disappear, while the other one becomes pathogenic. When two microbes are associated, now one, now the other recovers its virulence according to the method adopted for their introduction, and to the species of animal. This association of bacteria may be employed in the laboratory to restore virulence to attenuated microbes, and it may explain the recrudescence of certain epidemics, or the effects of vaccinations made with a benignant virus. The passage of one microbe which confers immunity against a given malady may increase the susceptibility for another.—*Ibid.*

Influence of Natural Agents on Virulence of Tubercle Bacillus.—Drs. A. RANSOME and S. DELÉPINE find that finely divided tuberculous matter is rapidly deprived of virulence in daylight and in free currents of air; fresh air has some, though a retarded influence in darkness, while

in the absence of air or in a confined air the bacillus retains its power for long periods of time.—*Ibid.*

Removal of Rust from Instruments.—Herr Säuger recommends the following method for removing rust from instruments:—The instruments are placed for the night in saturated solution of chloride of tin, when the layer of rust will disappear by reduction. After taking them out of the solution the instruments are washed with water, brought into a hot solution of soda-soap, and then dried. A further cleaning with absolute alcohol and whiting is also advisable. Ordinary petroleum may also be used with advantage for removing rust. Paraffin oil is recommended as the best means of protecting steel instruments from rust. To avoid using excess of oil, the best method of procedure is to take a solution of one part paraffin oil in 200 parts benzine, to immerse the instruments in this solution, and afterwards place them on a plate in a dry room where the benzine may evaporate.—*Ibid.*

The Antiseptic Action of Milk Diet (*Berliner Wochenschrift*).—Messrs. Gilbert and Richet read a paper on this subject before the Biological Institute of Paris. The subjects of their experiments were a man, a woman, a dog, and a rabbit. They found that the number of microbes in the fæces diminished daily when the food was changed to milk diet, and on the fifth day the number of bacteria was only a seventieth of the original number. In the case of the rabbit the asepsis of the alimentary canal was almost perfect. Of course it cannot be said that milk itself is antiseptic, but it evidently produced asepsis, probably because its milk was so thoroughly absorbed as to leave insufficient pabulum for the microbes to multiply on. It was further noticed that after milk diet the acidity of the stomach contents was greater than after other kinds of food, and it is just possible that the rapid passage of this sour medium into the canal may have by its excess of hydrochloric acid acted as a germicide.

Salve for Burns.—Starr recommends the following:—℞ Liq. Ferri Sesquichlorati 3 parts, Vaselini 24 parts; f. ungt.

When this is applied to superficial burns it relieves the pain and prevents blisters from forming. It is also very good as a bandage for ulcers that have been deeply cauterised.

Vomiting.—Dr. Rekfeld recommends the following composition as a cure for persistent vomiting:—℞

Emulsion. Semin. Papaveris 100 parts, Cocaini Hydrochlor. ·003 to ·01 parts. Dose, one teaspoonful hourly. (*Berliner Thierärzt. Wochenschrift.*)

Preservation of Thread in Antiseptic Fluids.—Van Ketch has found (*Pharm. Zeits.*, No. 63) that thread when kept in a ·1 per cent. solution of sublimate, is able so far to exhaust the solution that the presence of sublimate cannot be detected in it, and blue mould if sown upon it grows freely. He therefore recommends that the thread be kept in absolute alcohol, and only immediately before use should it be dipped in a solution of ·1 per cent. sublimate and 1 per cent. common salt.

Therapeutics of Hoof Canker.—Imminger's view of the therapeutics of foot canker has received the high recommendation of Professor Hoffmann.* If the existence of the malady is not precisely ascertained, it does not matter so far as the therapeutics is concerned. Imminger has taught that for treatment the free use of the sharp spoon is most to be recommended, and Hoffmann recommends this method throughout. The following is Imminger's practice.

The horse receives for a few days previously little sharp fodder; the shoe is taken off and the hoof cut out as well as possible, the hair of the fetlock is shorn, a strong soap and water bath and a salve of sublimate (1 to 100) is made, which is brushed over the whole foot and fetlock with a large brush. The whole is then rolled up in tow which has been dipped in a 5 per cent. solution of lysol and wrapped in flannel. In the operation the horse must be cast chloroformed and bound with the Esmarch bandage, the coverings the hoof thoroughly disinfected, all loose pieces of horn taken away with rasp and surgical knives, and then all diseased and soft parts removed with the sharp spoon. Then shave, if necessary, down to the bone, and scrape the groove of it out, and then wash with sublimate solution (1 to 5000). Then powder the place abundantly with thioform, cover it with thioform gauze, and bind it up with wadding and gauze bandage. On the top of that bind firmly a linen bandage, and protect the whole with a leather shoe.

After three days it is to be examined, and if the whole is dry and of uniform colour the bandage is to be immediately reapplied. If any discoloured parts are seen

* *Zeitschrift f. Vetrnkd.*, Nov., 1894.

they should be treated with cocain and scraped clean with the sharp spoon, and bandaged up as already described. The results are first-rate.

Clinical Cases.

LAMENESS AND SHYING DUE TO PREGNANCY.

By A. J. Haslam, M.D., C.M., F.R.C.V.S.,
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About the middle of November, 1892, at Cawnpore, Lieut. H. Edwards, 4th Bengal Cavalry, brought a "country-bred" pony mare, aged five, for my inspection.

Her abdomen was moderately swollen, and as she had been at grass, it was considered to be a rather large "grass belly." Gentle work was recommended.

In February, 1893, the mare went suddenly lame on near fore while being ridden at a trot. On the next day she was shown to me, when I found lameness only in the near hind on her coming out of the stable. The lameness was present all that day. No disease, enlargement, nor tenderness could be found in any limb, but as action indicated the seat of lesion (?) to be high up, and as the lameness was very acute, I ordered fomentation and rest, and considered Mr. Edwards to have been mistaken about the front lameness!

Case seen weekly for about a month. The near hind lameness persisted more or less, but sometimes an off fore as well, and once both near hind and near fore. She never hesitated in her action, but went perfectly freely. Occasionally she would come out of the stable very lame, and after a little exercise change suddenly from one lame leg to another, and sometimes go sound. At no time was she ever lame on the off hind. I began to suspect some curious lameness free from pain, and as the abdomen was increasing, I thought pregnancy might have something to do with the case.

In March, 1893, swelling of abdomen was very apparent.

In the first week of June, 1893, Major Rayment, F.R.C.V.S., after a careful examination, gave it as his opinion that she must foal within a fortnight. Her udder was thought to be a little swollen, also the vulva, and her

"hip-bones" appeared distinctly dropped. As the abdomen continued increasing, and as the lameness did not alter, and appeared quite painless, I recommended work. The lameness for most of the time was greatest on the off fore.

On 1st August she began to "shy" a good deal at every sort of object, equally at each side, and has lately been somewhat pettish in temper. Both these conditions and the lameness continued until foaling. On 3rd August the udder was distinctly swollen, and the abdomen was excessively broad from side to side. On 3rd September she foaled a very large healthy foal. As I was on out-station duty at the time I did not witness the labour. Unfortunately the foal was not weighed at birth, but I have no hesitation in stating that it was decidedly big for the mare. On 11th September the mare walked and trotted before me perfectly sound, and continued so up to April, 1894, when her owner left India.

The mare, when I saw her on the 11th September, and for a week or so afterwards, was particularly jealous and watchful of her fine foal, but perfectly quiet; the "shying" had almost entirely disappeared, but all trace of the "pettish" temper had gone.

Apparently it was her first foal, and although the sire could not be traced, the appearance of the foal indicated English paternity. The mare herself was 14 hands 3 inches in height.

On 17th September, 1893, the mare was ridden: neither lameness nor shying. After this time a mere trace of the shying remained, but never any lameness.

Apparently in this case we had certain muscles contracting, the result of reflex action excited by the fœtus. If there had been pain at all, which I doubt, it was presumably referred to the uterus.

Veterinary Col. Hallen, F.R.S.E., F.R.C.S.E., to whom I gave some details of the case, is of opinion that the case was a form of hysteria.

From the evanescent nature of the symptoms one cannot suppose there was organic disease. This case appears to have its analogues in the neuroses of human pregnancy, *e. g.* the well-known sympathetic nausea and vomiting, transient dizziness, insomnia, and other anomalous nervous symptoms sometimes complained of.

The peculiar features of the pregnancy itself in this case are noteworthy.

MISHAPS DURING CASTRATION.

By W. Anderson, M.R.C.V.S., Keith.

In the hope that a record of the two following cases may prove of interest to those who have castration to perform, and be the means of causing a brother in distress never to give up a case, no matter how gloomy the prospect, I beg to relate the following.

Case 1.—In the castration season, 1893, after all had gone well with over a hundred colts, I was called on to operate on a large Clydesdale yearling colt. He was sent from a neighbouring farm, and the owner was not present. But before operating I examined the colt and found no hernia, and the owner informed me afterwards that he was not aware of anything being amiss. I cast the colt with ropes, thoroughly disinfected the scrotum, &c., with a solution of Hydrarg. Bichlor. 1—1000, and operated by torsion. All went well till the colt got on to his feet, when immediately the small intestines came down through the opening on the right side, and before anything could be done they were lower than the hocks. I had a large towel beside me, into which I placed them, and then put a man to each side of him to hold them up as near the abdomen as possible. The ropes had not been removed, and in a few seconds we had him on his back again; but the amount of intestines exposed to view by this time was so great that to replace them with any hope of recovery seemed to me an impossibility. I carefully cleaned them all, and freely applied the Bichlor. solution, 1—1000, and after a great amount of manipulation succeeded in passing them on, without any injury of which I was aware, through the canal. I then decided to put on a wooden clam, which I had to make myself at a carpenter's shop, which fortunately was near at hand. The clam was put on as far up as possible, and included as much of the loose skin and subcutaneous tissue as I could get hold of. During all this time he never strained, or struggled, which was very much in his favour as well as mine. When he got up he was looking quite bright and walked to the box, but for an hour or two was much pained. About ten hours after the operation the pain left, and he began to feed, and but for an abscess which formed above the clam his recovery was as satisfactory and complete as after an ordinary case of castration. I had the pleasure of seeing

him during the summer running in the fields along with his fellows as bright and active as any of them.

Case 2 also occurred in a Clydesdale yearling colt, which was cast and secured by ropes for castration in the ordinary way. Just as the first incision was made he gave a great struggle, and there was a loud crack, which all standing around heard, and which could have been heard for thirty yards away. I had no doubt but that there was a fracture of some of the large bones, so finished the operation as quickly as possible, and allowed him to get up, when he showed signs of great pain in the near hind leg. I examined for a fracture, but could find no displacement of any of the bones. On the lower third of the tibia, on the inside, about five inches from the hock, there was a little swelling and great pain on pressure, so I concluded the fracture must be there, and secured the part as firmly as possible with bandages, splints, pitch, &c. In about six weeks afterwards I had them removed, when I found a large deposit of ensheathing callus extending round the bone, which left no doubt as to the seat of fracture. By this time he could put a little weight on the limb, and when I last saw him about six months after the accident he was quite recovered, and the thickening almost gone. He was kept in a loose box all the time, and could lie down without any difficulty, but had to be helped to rise.

CONGENITAL DEFORMITY.

Mr. F. E. Place, M.R.C.V.S., Honiton, forwards to us a photograph of a three-year-old filly showing congenital deformity. Her dam has a slight tendency to "pigeon-toe" on the near side, and since giving birth to the filly above mentioned has produced two other foals, each of which has a like deformity, although the sires are different in each case. Mr. Place treated the filly soon after birth, at the owner's urgent request, by placing the limb in plaster-of-Paris bandages, and specially constructed iron splints, but all to no purpose; at the date of writing she is probably worse than ever. It is said that she is pregnant, and we hope she is, if only to see if the deformity is transmitted to the offspring. We hope when the foal is born Mr. Place will have mother and offspring photographed, that we may reproduce them in the *Veterinarian*. From the photograph forwarded to us,

unfortunately not suitable for reproduction, the near fore-limb is most pronouncedly curved, the concavity being inwards. We are not quite certain but that the off fore-limb shows in a slight degree a similar condition, but this appearance may be due to the decided slope of the ground upon which she stood.

Mr. Place also forwards to us a photograph of a fractured cervical vertebra. The specimen is from a filly fifteen months old that was chased by boys, and whilst endeavouring to escape from her tormentors breasted a five-barred gate, fell upon her forehead, turned a complete somersault, and broke her neck. Death ensued in three minutes.

The photograph shows two large pieces of bone detached from the vertebra, and apparently are transverse process and portion of the arch (pedicle and lamina).

TUMOURS IN THE LATERAL VENTRICLES OF THE BRAIN ASSOCIATED WITH DROPSY.

By T. Scotson, M.R.C.V.S.

(Read before the Edinburgh Veterinary Medical Association.)

The communication I have the pleasure of bringing to your notice is a case which occurred in the practice of my preceptor, Mr. T. Simpson, Liverpool, during the summer vacation.

The subject was a heavy draught-horse, which had been worked by a large firm in the city for some years. He did his work with every satisfaction until the summer of last year, when his driver complained that the horse suffered from periodical fits of stupidity and sluggishness, and that he had great difficulty in keeping his head up and driving him along. It was during one of these attacks of a rather more severe nature that we were asked to see him. On arriving at the place, which was only a short distance, we found our patient in a stall. He was showing no signs of pain, but his head was hanging between his knees, almost reaching the ground, and he would occasionally rest it on the manger. His eyes had a very dull and sleepy appearance, the eyelids being partly closed, with just a small portion of the membrana nictitans showing at the inner canthus, and the pupils were dilated.

On closer examination the conjunctiva was found to be injected. Pulse feeble and slow, about 28 per minute. Respiration hurried and rather laboured. Temperature normal. Fæces somewhat hard in consistency. There being a loose box on the premises, it was our first object to have him removed. We experienced great difficulty in getting him to back out of the stall and walk across to the box. He appeared to be altogether unconscious of surrounding objects, and walked with a staggering gait like a drunken man. On loosening his head he made no attempt to move, but simply stood in the same position, his head hanging and eyes almost closed. After some little time he made attempts to walk round the box, his head banging into each corner as he turned round. We now tried his power of prehension by offering him a little hay, but he took no notice; volition and sensibility were materially diminished.

Diagnosis.—We concluded that he was suffering from some form of brain disease, either of an effusive nature, or the presence of tumours causing pressure on some of the vital centres, or that it was of dietetic origin.

Prognosis.—Unfavorable.

Treatment.—Gave dose of physic, aloes ʒvj, blistered poll with Ol. Cantharidis, 1—8, left an Ammon. Carb. ball, ʒiij, for him to have in the evening. I left word with the attendant to watch the horse as much as his time would allow, and let him have no hay or corn, but simply a little bran mash if inclined to eat it. I said I would call in the morning, and that if any change took place during the day to let me know. On visiting my patient the second day there was not much alteration in the symptoms above described, except that his eyes appeared brighter. Pulse 30 and a little firmer.

Treatment.—Bromide of ammonium ʒij in bolus, and left a similar dose for him to have in the evening, and a packet of nitrate of potash to give him in his drinking-water. Third day.—Patient much brighter, and apparently recognised me as I walked into the box. Appetite improved. Pulse 35. Respiration a little hurried. Bowels somewhat relaxed from the physic. Treatment same as previous day. Fourth day.—Patient much better. Pulse 38. Resp. normal. Continued bromide of ammonia once daily, and nitrate of potash in the drinking-water. Fifth day.—Had the horse walked out, and he appeared quite himself. I allowed him to be put to slow work on the morrow, but dieting him carefully plenty of bran, but little corn and

hay. We heard nothing more of our case for eight or ten days, when we received a message that the horse had been taken ill again, and to come at once. On arriving we found our patient in a box, showing exactly the same symptoms as on the previous occasion,—depression of head, slow feeble pulse; stupidity and unconsciousness well marked, with the same staggering gait, &c. &c.

Treatment.—We adopted exactly the same measures as on the previous occasion—purgatives and diuretics and careful dieting, with the same result that in a few days he was put to work again. But after a few days' exertion, especially if the weather was hot, he would have a similar attack. I may state that during the whole of the summer months of June, July, and August, especially if the weather was hot, this horse suffered from these periodic attacks, each attack increasing in severity, until we were always more or less in attendance. At last my preceptor advised the owners to have him destroyed, being sure that he was suffering from some grave brain lesion.

Post-mortem.—All abdominal and thoracic organs appeared healthy. On opening the cranial cavity the brain substance appeared to be somewhat softened and flabby. During manipulation the lateral ventricles ruptured, and the two tumours I have before you fell out. They have shrunk a little, but when fresh were about the size of large hen's eggs. The ventricles were much dilated, and contained a quantity of a straw-coloured fluid. The brain substance in the neighbourhood was much atrophied. I brought the tumours up to the College with me, and Mr. Stockman has kindly examined them microscopically, and pronounced them to be *psammomata*.

A CONTRIBUTION TO THE STUDY OF INTESTINAL OBSTRUCTION.

By a "NEW SUBSCRIBER."

CALLED to see a horse one evening in a neighbouring stable, I found an average-sized farm horse, some nine or ten years old, hanging back in his stall, occasionally moving his head and neck up and down, holding up first one fore-foot and then the other, but not kicking, and scraping very little. I was told that when brought in from the plough he had not looked at some food in his manger, and had begun

to show those symptoms as soon as the harness was removed. Further examination revealed the pulse about the natural frequency, full, strong, and firm; mucous membranes, respirations, &c., natural, and the surface of the body of a natural and equable warmth; but the temperature was only 97·5° F. Neither persuasion nor coercion could induce him to have his mouth examined, nor, after the first attempt, touched. He was therefore left as he was fully an hour, his driver watching him; but he got gradually worse, and was removed to an empty stall in a byre, the loose boxes being all full. At 11 p.m. the pulse was about 50, temperature little over 97°, and he was evidently becoming worse, rising and lying frequently, and scraping with his feet, but was by no means violent. All this time he had not got any medicine, but occasional warm water enemas were given, which, however, came away clean. He had not passed any fæces since brought in from work. No morphia could be got, in solution or otherwise, in that remote district, and a couple of warm rugs with occasional enemas, in which he got several half-ounces of aloes in solution, was the treatment administered through the night. At 6 a.m. his pulse was 65 and a good deal smaller, temperature still under 98° F., respirations accelerated, mucous membranes slightly congested, and extremities not so warm. He was getting more restless and more reckless, but now and again stood a few minutes quietly, and also lay quietly for some time when down. No fæces had been passed, and although it was evident that there had been no primary inflammation, it was equally manifest that there was some obstruction in the course of the intestinal canal, mechanical or otherwise. Careful rectal examination revealed nothing. Phlebotomy was had recourse to freely, and an attempt made to administer medicine by the mouth. A strong cart-rope was got, a halter made in it, and with this his head was drawn up above the level of the rack, and made fast to it and one of the travis posts. Castor oil was then poured carefully into the right nostril. This was evidently something new to our patient. He did not understand it, but was soon satisfied that he was being taken an undue advantage of; so he suddenly reared up, smashing with his fore-feet about the rack and travis. A small lamp that had been set on the top of the wall, over nine feet above the level he was standing on, was sent spinning elsewhere, and with a sudden jerk he snapped the rope and alighted on his back at the other side of the house. Fortunately no one was hurt, so more ropes were got, and with addi-

tional precautions the greater part of the oil was administered in spite of him. He would have had at least about a pint of it. All this time he had eaten nothing, but frequently worked with his lips and mouth in water placed before him, although very little of it was swallowed. 2 p.m. —Still growing worse; pulse 80, temperature 100°, mucous membranes more congested. His owner was very anxious that more purgative medicine should be given him; so, taking advantage when he was down, his legs were secured with ropes, and he was held down. His head was also pretty securely held, while, with the aid of a gag and balling gun, a ball composed of aloes, calomel, and a couple of drams of Pulv. Opii was, with some difficulty, administered. 10 p.m.—Pulse nearly 100, temperature over 102°, respirations hurried, and he was becoming violent. He struggled on through the night, but died about 10 a.m. next day.

Autopsy.—On opening the abdomen it seemed at first that there was no manifest cause for the symptoms shown, but further examination revealed an obstruction in the single colon, about three feet from its origin. On opening the bowel this was found to be due to the presence of a dust ball. It was only about four inches in diameter, and not unlike a large, round, white potato. The bowel was empty behind it, but full in front, although not very much distended. Neither had the bowel such a firm hold of the ball but it seemed possible that it might have been passed on. There was a little congestion of the bowel about the obstruction and in some parts which had been in contact, but not very much.

LINCOLNSHIRE VETERINARY MEDICAL ASSOCIATION.

A MEETING of this Society was held at the Albion Hotel, Lincoln, on Thursday, October 25th, 1894. In the absence, through illness, of the President (H. J. Goodall, Esq.), the chair was taken by Mr. H. Howse, one of the vice-presidents, and there were also present Captain Russell and Messrs. T. A. Rudkin, Grantham; W. H. Brooks, Leadenham; T. E. Smith, Market Rasen; C. Hartley and C. Seeley, Lincoln; F. A. Holmes, Hemswell; and J. A. Robinson, Hon. Sec., Market Deeping. Captain M. H. Hayes, F.R.C.V.S., Melton Mowbray, was also present as a visitor.

The following letter was then read:

Royal College of Veterinary Surgeons,
10, Red Lion Square, W.C.;
October, 1894.

DEAR SIR,—I am desired by the President to say that the subject of a grant of money to the British Institute of Preventive Medicine will come before the Council of the Royal College of Veterinary Surgeons at their next meeting, and that should your Society desire to subscribe, it would guide the Council in their deliberations if they knew the sums which might be expected from each society as supplementing the grant of the College.

I am, yours very faithfully,
J. A. ROBINSON, Esq. A. W. HILL, *Secretary.*

Captain Russell suggested that if the Institute felt inclined to pledge themselves to carry out the suggestions of the Royal College, he thought this would not be a bad opportunity to say what they (the Lincolnshire Society) were prepared to do. It would strengthen the hands of the Royal College if they knew what the associations up and down the country would contribute in this respect. Their own funds were in a healthy state.

Mr. Hartley thought they might perhaps pledge themselves to a certain amount, subject to certain conditions.

Captain Russell said the Society might send them a cheque for £5, which Mr. Hartley assured them would be gladly accepted.

Captain Russell then moved this formally, and it was seconded and adopted.

Mr. Howse proposed, and *Mr. Hartley* seconded, that Mr. Frank Bowman Eve, Louth, be accepted as a new member. Carried *nem. con.*

BANDAGING WITH PRESSURE AND HAND-RUBBING.
By Captain Hayes, M.R.C.V.S.

MR. CHAIRMAN AND GENTLEMEN,—I am happy to say that, although I shall be able to expound the subject before us in a few sentences, it is one of immense practical knowledge, and will furnish ample food for reflection if not for discussion.

The primary result to be obtained from the application of pressure and massage is the removal of exudation from tissues in which it exists in an abnormal amount, from injury, from weakness, or from disease. In sprains the pressure of extravasated blood and excess of *liquor sanguinis* causes separation of the ruptured fibres and interference with the circulation of the part, so that accurate repair becomes impossible, and the tissue becomes permanently weakened. In pressure we have the most effective means for accomplishing this desirable end, and in bandaging with cotton wadding the readiest method for applying such pressure. In the most frequent sprains, namely, those below the hock and knee, the procedure is as simple as it is beneficial, and may be described as follows:—Take two yards of unbleached cotton wadding, which can be procured at any draper's shop for fivepence, divide it down the centre, wrap the two pieces one over the other round the seat of injury, and then apply as tightly as possible a strong cotton bandage six yards long and three inches broad. For the sake of cleanliness, and to prevent the horse from pulling the bandage off with his teeth, I find it well to cover the whole with an ordinary flannel bandage. There we have the entire treatment necessary for all

recent sprains of the perforans, perforatus, inferior carpal ligament, check ligament, lateral ligaments of the fetlock, or of the inferior sesamoid ligaments. In the first instance the bandage may remain on for twenty-four hours, and should be followed by passive exercise and massage, so as to stimulate the absorbents and to prevent the formation of adhesions. The second and succeeding application of the bandage with pressure may be continued for twelve hours. I may dismiss the subject of hand-rubbing by saying that we should substitute massage for it, and that we should work in the direction of the course of the lymphatics and veins, and not against it as is usually done. The part subjected to massage ought also to be in a relaxed condition, which we may obtain in the fore-leg by flexing the limb.

The cotton wadding is merely a means for obtaining evenly distributed pressure. Not only in sprains have I found this method of applying pressure beyond all praise, but also in cases of blows and filled legs, to say nothing of wind-galls. I was induced to try in equine practice the effect of evenly distributed pressure by Dr. Henderson, of Shanghai, in May, 1888, and since then have had such marked success with it that I use no other treatment for the injuries just mentioned. After many experiments I have found cotton wadding the most convenient means of applying the pressure in question. The procedure I advocate is not applicable to cases in which lymph has become solid, but although it cannot cause the removal of any organised deposit, it can prevent such deposit taking place. I have found it admirable in obviating any thickening after an over-reach on the flexor tendons, or, more correctly speaking, on the perforatus tendon.

The *Vice-President* said they were all extremely obliged to Captain Hayes for his demonstration of, to him, this new style of bandaging. Captain Hayes said the bandage could be applied round the fetlock, hock, or knee in the form of a figure 8.

Captain Russell said he thought it would be very remiss on their part if they did not tell Captain Hayes how much obliged they were to him for his interesting address. The idea of this wadding was entirely new to him; bandaging they were all pretty well acquainted with, and no doubt it was largely used. He was very much in the habit of using wet sponges; it had been a matter of thought with him how to fill up the interstices between the tendons and the bones, and get a common pressure. The pressure must be equable to be of much use. There was one case in which he found some difficulty, and that was in a case of displacement of the gastrocnemius tendon where it passes over the hock. After raising the heel of the horse's shoe and putting the tendon into its place, he found the greatest difficulty in keeping it there. He got a set of flat sponges and applied them dry, bandaged them on, and wetted them with water. It answered admirably, and the case in course of time got all right, but it was about three months before it was sound and ready to go home. He could quite see that the bandaging as shown by Captain Hayes would be of very great service, and especially so because they could use it dry.

Captain Hayes said he was entirely alive to the benefit to be derived from applying a high-heeled shoe and putting the part into rest. We must not be led away, however, by that word "rest," but must give the part passive exercise, raising the limb from the ground, flexing it, and extending it. They did not want to put a

strain on the part by making the animal move about, but it must have passive exercise, and in India they used to swim them for this purpose. They wanted passive exercise as well as massage. It not only quickened the circulation, but carried away extravasated blood and extra lymph, and prevented any deposit forming. Massage prevented adhesion. A horse began to be upright in front, his pasterns began to be more in the same lines as the metacarpals, and the reason he could not gallop was that his legs were straight. He described the mode of galloping, and said in order to produce that beautiful style of level action it was required that the horse should freely extend its fore-limbs, and he should have sloping pasterns as well as sloping shoulders.

Mr. Hartley said he should like to add his thanks to those of Captain Russell for the very practical information which Captain Hayes had given to them. Among other experiments, he used dry pressure with sheet lead, and he should like to ask Captain Hayes whether some medium of that sort for strengthening the parts would not be of service. He had also tried clay, which he had found useful, and had put on elastic bandages, but they did not do very well; they used to stop the circulation, and he believed did more harm than good. He advocated cooling lotions for bandages, and said he wished to thank Captain Hayes for his suggestion as to massaging the limb when in a state of relaxation.

Captain Hayes said that the great point in sprains was to catch them quick, as there was a difficulty as to swelling, which interfered with the circulation. Passive exercise and massage should be used at the same time. He had always thought that bandaging race-horses prevented them from extending themselves as much as they might.

Mr. Rudkin said it was quite new to him, this massage treatment, and he should certainly try it. Plastic bandages were said to be good things, and it was marvellous the excellent results that a friend of his had obtained by the use of them.

Mr. Hartley said he had used plastic bandages for eighteen years, but if they were kept on the leg they would soon bring about a disastrous condition of things.

Captain Hayes, in answer to Mr. Hartley, said he had not treated with massage the muscles of the forearm.

Captain Russell then moved a hearty vote of thanks to Captain Hayes for his able address, which was seconded by *Mr. Hartley*, and adopted by acclamation.

Captain Hayes suitably acknowledged the resolution.

A cordial vote of thanks to the Chairman for presiding concluded the meeting. JNO. A. ROBINSON, *Hon. Sec.*

THE YORKSHIRE VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of this Association was held on October 26th at the Queen's Hotel, Leeds. Mr. A. W. Mason, F.R.C.V.S., the President, was in the chair; and amongst those present were Messrs. J. M. Axe, Doncaster; Thos. Pratt, Ripon; J. C. Collings, Otley; F. W. L. Clough, Morley; A. McCarmick, Leeds; H. Snarry, York; F. Thompson, Harrogate; James Cooke, Scarborough;

E. H. Pratt, Rawdon; G. Pickering, York; Geo. Hardie, York; P. Deighton, Riccall, York; B. Smith, Barnsley; M. Robinson, Barnsley; J. Clarkson, Garforth; W. Collinson, York; J. W. Anderton, Skipton; H. Pollard, Wakefield; J. Atcherley, Harrogate; J. H. Sowden, York; F. Somers, Leeds; J. S. Carter, Bradford; S. Wharam, Leeds; Messrs. G. H. Simpson, C. Steel, R. S. White, and Professor Penberthy, visitors; and the Hon. Sec., W. F. Greenhalgh.

Election of Officers.

Mr. Clarkson proposed, and *Mr. Pickering* seconded, that Mr. Cooke, Scarborough, be the President for the ensuing year. This was carried.

Mr. Cooke, in returning thanks to the members for the honour they had conferred upon him, gave his assurance that nothing would be omitted on his part to forward the best interests of the Association.

Professor Penberthy then read an exhaustive paper on "Anthrax."

After giving an interesting account of the history of the disease, Professor Penberthy described the bacillus, its recognition, mode of growth, and emphasised the following points: that during life of its host probably only bacilli were formed in the body; that these were destroyed by putrefaction; that as the septic process advanced from the interior from the intestines, which always contained putrefactive organisms, and provided other conditions favorable to the process, the external parts of the carcass contained anthrax bacilli after the destruction of those which were in the internal parts; that on gaining access to free oxygen spores were formed, which the putrefaction process did not destroy, but which lived for indefinite periods outside the body, and on regaining entrance to the system of the healthy animal induced the disease. The unopened carcass which has thoroughly putrefied then is a source of little danger, while blood which has escaped before putrefaction is highly dangerous. Probably, however, if the blood is in very thin layers and desiccation immediately occurs, as must frequently be the case, the organisms are killed and it becomes inert.

In Great Britain the ox and sheep are most commonly the subjects of anthrax; next come the pig and horse, dog and cat. Ferrets, mice, rabbits, guinea-pigs, are easily affected; fowls seldom naturally contract the disease, and on account of their high temperature are said to enjoy a degree of immunity.

Amongst our patients, infection probably most frequently takes place by entrance of spores, and, notwithstanding recent contrary statements, there is evidence which goes to prove that both spores and bacilli may enter by invasion of lymphatics and unbroken mucous membranes, as well as through wounds and abrasions.

Man is also liable to attack; and this in Great Britain is most frequently from inoculation, when a local condition, "malignant pustule," is established, or from the inhalation of spores inducing "woolsorters' disease," so called from the fact that workers in a certain part of the process of wool manufactures are most liable to it. All susceptible animals are liable to different forms of anthrax, determined to a great extent by the mode or place of entrance of the virus. When the virus enters through an external wound or abrasion, and there is a primary local lesion, the term local anthrax, malignant pustule, or carbuncle is applied to it. According to the seat of the local lesion, sometimes special names

are given, *i. e.* gloss-anthrax when the tongue is so affected; probably this is often a misnomer, and gloss-anthrax really black quarter. The disease following ingestion of the virus is called *internal, intestinal anthrax,* or often *splenic apoplexy;* that following inhalation of the spores *pulmonary anthrax.* The time which elapses from the entrance of the virus to the first appreciable symptom (elevation of temperature) in most of our patients varies from twenty-four to sixty hours; the average, I think, less than forty. The effect of the virus will to some extent depend on the number of spores and bacilli entering the blood-stream at once, on the virulence of the virus, and the individual or class susceptibility of the subject.

The effect of the bacillus in the blood is to de-oxygenate it, to render it wholly or imperfectly uncoagulable, black, and tarry, the production of ptomaines, albumoses, &c. In the tissues it sets up an inflammation, whose product is of a peculiar citron-coloured gelatinous-looking material. In man at the seat of inoculation there is a necrosis, the dead tissue becoming black (hence the name anthrax), and inflammation and infiltration of the surrounding tissues. It is stated that in "malignant pustule" of man the lesion may exist for days without bacilli being demonstrable in the general blood-stream. The effects of the disease on the animal may be attributed to alterations of the blood itself, to the special product of the bacillus, ptomaines, blocking of capillaries, and sometimes to swellings.

Anthrax must be regarded as a fatal disease, but I think it a great mistake to look on it as absolutely so. There are no means of exactly determining the proportion of deaths of infected animals, but there is reason for supposing that this varies considerably. Sheep would appear to be nearly always mortally affected, though further observation is necessary before coming to a conclusion. I think it is not so fatal as black quarter. In the human subject, where surgical treatment is adopted there is a large proportion of recoveries. In different outbreaks amongst cattle I have observed a considerable number of favorable terminations, in several when the thermometer registered temperatures from 106° to 108·5°.

The lesions of anthrax are varied in the different species of animal, probably depending on the habit and anatomical character of the species. In all animals dying of anthrax, however, certain characters are observable; there is early evidence of putrefaction, and the bacilli in the blood. In cattle and sheep usually a few hours after death there are evidences of putrefaction, which commences, and is most advanced, in the abdominal viscera. We thus find the abdomen much distended, the anus protruded, and often blood is noticed escaping from it. Bloody spume is often seen about the nostrils and mouth, while parts are of a dark colour, indicating venous congestion. The blood is dark and tarry, and shows little tendency to coagulate; if examined soon after death, it is found to contain anthrax bacilli and excess of white corpuscles. Internally, the most marked and generally obtaining feature is the engorgement of the spleen, which frequently assumes an immense size. Sometimes in cattle its weight reaches 60 lbs. In extreme distension the pulp is broken down, occasionally its capsule is ruptured, and the abdominal cavity contains a considerable quantity of blood. It is important to remember that the spleen does not always reach these large proportions, though in most cases, if not

in all, there will be some enlargement of the spleen, of which the blood is dark and tarry in appearance. On making an incision into the organ, which is in a more or less diffluent condition, the dark blood flows into the incision. If a piece of spleen is cut off, blood flows from it. If putrefaction has not far advanced, the *Bacillus anthracis* is found here. As putrefaction progresses, the anthrax bacilli become less and less, and in their stead we have putrefaction organisms. So that in some instances we may find both *Bacillus anthracis* and putrefactive organisms. If a slide is mounted with blood in this condition, without any preparation of drying or staining, we notice moving and non-moving bacilli, the former being putrefactive, the latter probably those of anthrax. With a little experience one soon becomes able to form a decided opinion without the aid of the microscope, nevertheless it is often necessary. In the intestines there may be evidence of inflammation and blood effusion, more or less intense. Sometimes there is much infiltration of the coats of the bowel with the gelatiniform material described before. The mesenteric lymphatic glands are enlarged, and usually dark from vascular engorgement. Occasionally there are blood markings in various parts of the carcass, especially in kidneys and heart, and collections of jelly-like nature; this is most common about the throat.

In the horse gelatinous exudation about the throat and neck is more common than in cattle (Loodianah disease, India).

In the *pig* the throat lesion is most frequent; they probably nearly always contract the disease by eating parts of affected carcases. The amount of this material is often very large, the lymphatic glands are engorged with blood and inflammatory products. In both horse and pig the other lesions described as occurring in cattle are in varying degrees noticeable. In pigs Crookshank often found ulceration of the tonsils, and the spleen not much affected. In dogs there is a collection of more or less gelatiniform material about the throat.

The symptoms of anthrax are, I fear, often regarded as of little practical importance. It is usually said that the veterinary surgeon is called to see an animal which is dead before he arrives, and we have come to regard our function as simply that of making a *post-mortem*, and declaring the existence or non-existence of disease. I allow that often the practitioner does find his patient dead on arrival, but I think under ordinary conditions it is not uncommon for him to be called, after no long interval, to find a similar state of affairs, for which he was as unprepared as his client. In connection with the clinical aspect of anthrax I think two assumptions have conduced to this. These assumptions, which I believe unwarranted, depend on the view that anthrax is always fatal, and that there are no early signs of the disease. That both are wrong my experience has amply proved. In the first place, I have known many animals recover; and in the second I have found, with an animal in apparent health, the temperature very high some time before death. It cannot be doubted that in this country in the majority of instances we are called to the case of an animal which has been observed to die suddenly or to have been found dead. Occasionally, however, there is time for the veterinary surgeon to see affected animals alive. This may occur under two conditions: the one in which an animal has been noticed by owner or attendant to be unwell before his arrival; the other comes under his observation on inspecting a herd of whose number one or more have previously died.

During the incubation of the disease, from thirty to forty hours after reception of the virus there is little to be noticed saving a rise of temperature, usually ranging from 104° to 108° F. Rigors and muscular twitching are often present, restlessness and excitement are noticed in some instances, usually depression is evident. The appetite is occasionally maintained within a few hours of death. The respiratory acts are generally excessive, and sometimes in cattle associated with grunting. These may be noticed in all manifestations of anthrax, but other symptoms arise in relation to the parts specially affected. Swelling of the throat, &c., in pigs and horses is the rule, and sometimes in dogs. In affections of the spleen and intestines the extremities are cold, colicky pains are sometimes manifested, and blood and mucus which contain bacilli are passed by anus, nostrils, and mouth. The urine may also contain blood and the bacillus. Symptoms like those of cerebral apoplexy and convulsions may be predominant. Sheep sometimes leap into the air, fall, and exercise convulsive movements with their limbs. The visible mucous membranes manifest the deoxygenated condition of the blood, and are said to often show signs of hæmorrhage. I have rarely observed these latter. I am, however, disposed to the view that without a history of existence of the disease or microscopic examination of the excreta of the living, or the carcass of the dead, we have no means of certainly diagnosing anthrax. The examination of blood taken during life has not proved satisfactory, the bacilli in many cases have not been found in the superficial vessels within two or three hours of death.

If we are not able to satisfy ourselves as to diagnosis without microscopic research, and this is often necessary, blood for examination should be taken from superficial vessels, and care taken that no more is spilt than is necessary for an examination. We have seen that putrefaction is most likely to be fullest advanced and consequently the bacilli fewer in the internal organs. Should it be desired to send any part for expert examination, the part suggested by Prof. M'Fadyean—an ear or hoof—would be quite sufficient, and probably more satisfactory than portions of the spleen, which is early affected by putrefactive change. Any spilt blood should then be disinfected with strong carbolic or sulphuric acid, also blood passed by the anus, and spume from mouth and nostrils. If death occurred indoors, manure, straw, &c., should be burnt and the place disinfected. The carcass then must be buried according to the law. The lime which is ordered probably may be useful in destroying any virus which may escape from the animal, but otherwise it is unnecessary, and if it retards the process of putrefaction cannot be said to be of much value as regards the infected carcass. This being done there is little to be feared from that cadaver.

Discussion.

The *President.*—I am sure we are all extremely indebted to Professor Penberthy for the very able address he has given us on anthrax. We have had a good many cases of this disease in the different Ridings, and I thought it would be interesting to all of us if Prof. Penberthy would address us upon this subject. This disease is of special importance to stock-owners. You will observe that the Professor repeats the advice we have previously heard, that the best way to treat an animal which has died from anthrax is to let the carcass alone and not open it. Personally I cannot speak with any great degree

of knowledge of anthrax in this country. I have known many cases of it in India, where it is known by the name of Loodianah disease. The high temperature has been referred to, the colicky pains, and swollen necks. I have noticed a discharge from the nostrils, and in some cases from the eyes. It is of a more lasting character, and in some cases continues some length of time. It was always a mystery to the veterinary officers how the animals had become inoculated. Sometimes we were of opinion that small sand-gills being brought from the flies settled on these animals from the neighouring compounds of native cattle. I was most interested in the attempt to prove that it can come by ingestion. I was struck with what the Professor said with regard to colic and anthrax, when he spoke of these deep citron-purple coloured swellings in the intestines. We found those in cases of horses that died from colic in India. You may remember in my presidential address I called attention to the waste of the ratepayers' money by the destruction of animals which had been in contact with those which had died from anthrax. I said at the time it was totally unnecessary to destroy such animals. I suppose that we are such a wealthy nation that we can go on destroying these good animals. I must thank the Professor for coming here as a personal friend of mine, and also on your behalf for the long, exhaustive, and interesting and scientific work he has placed before us to-day.

Mr. Cooke.—There is only one thing I should like to say with regard to this paper. The Professor sticks to the analogy between the symptoms of animals afflicted with anthrax and those fed on a certain line. I believe I have remarked it before at these meetings. Some time ago I attended some animals under twelve months old showing symptoms of anthrax. The veterinary surgeon in attendance was suspicious it was anthrax, and each and every symptom pointed to the conclusion that he was right. On making further inquiries I found the animals had been fed on cotton cake. I don't think it is any uncommon thing for animals to show these symptoms if fed on this material. I don't think it is a suitable food for young stock.

Mr. Carter expressed the pleasure it had given him to listen to this paper, and said in his experience of anthrax he had always found a swelling in the throat.

Mr. Collins.—Supposing a country practitioner was called out to a case without knowing the history, and when he arrived he found it dead: what would his mode of procedure be? having no suspicion as to making a microscopic examination or a *post-mortem.*

Professor Penberthy.—Cut off one ear and put it in your pocket, and examine the blood microscopically.

Mr. Somers.—We have had in Leeds within the past week a case of woolsorters' disease for the first time. The man had been sorting Australian wool. He died in three days.

Mr. Thompson.—I had an outbreak at a farm some few days ago. In the first case there was high temperature, close upon 107°, swelling about the throat, and great difficulty in breathing; oozing of blood from the nostrils; dark-coloured fæces tinged with blood. She died three or four days after I saw her. The following morning I noticed another going wrong; she was dead within four hours. The third was about the same as the first, and there was nothing special about the other three. None of the lot lived above eight hours, the average being about four and a half to five hours. There

had been no fresh stock brought on the premises for eight or nine months; no fresh feeding stuff or fodder,—in fact, nothing fresh except some artificial manure last May, and I have reasons for thinking some of the materials it contained consisted of animal refuse imported from Egypt, and this might have caused the disease. A *post-mortem* examination was made in one case, and it showed the clearest indications of anthrax. Two animals had very high temperature, and they recovered without any treatment whatever. The animals were eating nothing but grass.

Professor Penberthy.—It seems to me there is very little to reply to. Mr. Thompson tells you that two of his cases recovered; that is about my general experience. Anthrax is not an absolutely fatal disease. With regard to manure I have known instances where broken bones have caused laceration, which has been the means of the inoculation of the subject. The duration of the disease, he tells us, was about four hours. Possibly had he been called in two days before he would have found the temperature of the animals that died very high. The case of woolsorters' disease which has been referred to is very interesting, especially as it is the first case which has occurred in Leeds. With regard to Mr. Cooke's remarks, I am disposed to the view that cotton cake occasionally carries with it some poison. It is not unusual to find nine-months-old cattle dying from eating cotton cake. I was very glad to hear Mr. Mason's remarks about anthrax in India. It is possible that the horses had got inoculated with spores.

The proceedings then terminated.

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

A QUARTERLY meeting was held at the George Hotel, Rugby, on Tuesday, November 13th, 1894. The chair was occupied by the President, Mr. H. Olver, of Tamworth, and there were also present Messrs. Over, Barber, Rugby; J. Blakeway, Stanley, Gibson, Parker, Malcolm, Birmingham; Trigger, Newcastle-under-Lyme; Huband, Cheltenham; Marriott, Merrick, Northampton; Blunt, Lutterworth; Carless, Stafford; Jones, Leicester; Burchnall, Loughborough; Green, Alfreton; Beddard, Wolverhampton; Gooch, Stamford; Dale, Coventry; Horton, Warwick; Prickett, Walsall; Barrett, Nuneaton; Collett, West Bromwich; Crowhurst, Leamington; King, Newport Pagnel; Grasby, Daventry; Carless, Worcester; and H. J. Dawes, Hon. Sec., West Bromwich.

Visitors:—Messrs. W. Bower, East Rudham; T. Slipper, Tamworth; Wilson, Rugby.

Letters of apology for non-attendance were received from the following:—Professor Williams, M'Fadyean, Macqueen, Penberthy, McCall, Dr. Fleming, Sir H. L. Simpson, Messrs, Smith, Aris, Bainbridge, Goodall, J. L. Barling, F. W. Barling, Wragg, Pritchard, &c.

The Proposed Jubilee Memorial.

Mr. Trigger, in introducing the subject, said he thought it was one which needed no apology from him, as it would commend itself to the good opinion of every member of the profession. They were

celebrating the jubilee of their charter of incorporation, and they must remember that fifty years ago certain men recognised that veterinary surgeons had no real *locus standi*, and never would have unless something were done on their behalf. It was now sought to immortalise the memory of those early friends of the professiou, and the veterinary surgeons of to-day, as distinguished from the farrier of the past, ought not to be slow to show their appreciation of the efforts of those to whom he had referred. With the exception of Professor Simonds, they had all passed away, and it was proposed to erect a sort of memorial tablet in the building of the Royal College in Red Lion Square. That would only cost a nominal sum, and any balance they might have in hand could go to the formation of a jubilee scholarship. The Royal College had already granted a sum of not less than £50.

Mr. Beddard did not see much use in the memorial tablet, but thought the scholarship an excellent idea, and he should be very glad to support it. He would move that this Association give a sum of £50.

Mr. Malcolm seconded, on condition that the memorial should take the form of a bursary or scholarship or some such way for the advancement of the profession.

Mr. Beddard having agreed to this condition, the resolution was unanimously carried, and Mr. Trigger, as chairman of the memorial committee, thanked the Association for their kind donation, at the same time promising to supplement it with ten guineas of his own.

Canker and some Allied Morbid Processes. By John Malcolm, F.R.C.V.S.

After a few prefatory remarks, during which he mentioned that he appeared before them at the request of the chairman, Mr. Malcolm designated canker as a disease of the horse's foot, characterised by an abnormal and radical transformation of the horn secreted, there being produced, in place of the normal compact coherent horn, a non-coherent cellular material which underwent a decomposing liquefaction of a highly malodorous character. Up to the present time the real nature and actual cause of this affection have remained strictly speaking unsettled questions, and they must necessarily continue more or less in the field of speculation until some more definite and reliable evidence is forthcoming than has yet been the case. He was sanguine, however, they would not have to wait long, as he had every confidence that whenever competent authorities will devote the requisite time and means necessary for such an investigation success will reward their efforts. Until then they must make the best deductions they could from the facts within their reach. Those led him to the very definite conclusion that they had to deal with a specific local infective process, depending upon local contamination for its origin, the presence and growth of the infecting agent for its persistence and extension, and the annihilation of that agent and its products for a radical cure; and he was as convinced of the accuracy of that as anything short of the most conclusive demonstration could make him.

Mr. Malcolm then proceeded to give a brief review of the opinions held by some antecedent and contemporary authorities, in order to clear up some debatable points and pave the way for a better appreciation of the morbid processes they were to consider. Continuing his remarks, Mr. Malcolm said that all current views on the ætiology

of canker, however much they might vary in detail, were essentially based upon one or other of two conceptions. In the one the disease process was considered as the local expression of a general morbid condition of the constitution, and in the other it was looked upon as a distinct specific local infection. It was manifest that those two conceptions were in radical contradistinction, and according as the one or the other was held must radically influence the therapeutics of the affection. A correct conclusion on the matter was therefore necessary. He quoted from an article he had previously written on the prevalent idea that canker was specially a disease of coarse-bred horses possessing the so-called lymphatic temperament, and showed that no class of horse was reaily exempt from the affection.

The next point to be considered was the erroneous assumption that any apparent recovery was unreal, inasmuch as the disease although appearing for a time to be cured invariably recurred. The mistake arose through confounding a relapse with a recurrence. Now while a recurrence was rare a relapse was frequent, and that was explainable in the local character of the disease, together with the acknowledged difficulty of completely eradicatiug every part of it, and the certainty with which the smallest uneradicated atom of infective material again reproduced the disease.

Another point which had been advanced with seeming cogency in this connection was the frequent co-existent involvement of two or more feet. That no doubt at first sight presented a greater obstacle to the local theory than the two contentions just dealt with, but the fact must not be lost sight of that the presence of the disease in two or more feet at the same time indicated no more than a contemporary similarity in origin, a point far short of establishing its filition with the constitution.

After having exploded the assumption that canker was incurable, and corroborated his assertion by stating a cure which he had recently effected under the observation of his friend Mr. Blakeway, the essayist proceeded to criticise the view taken of canker by some of his professional friends, and to justify his own theory that the disease was not constitutional, but local. He carefully explained the morbid process, apologising for the great length to which he went by stating that a true interpretation of the origin, nature, and progress of the disease was requisite for any real appreciation of what had to be accomplished to effect a cure.

He at length came to most the important section of the subject, viz. that of treatment. As he absolutely disbelieved in the constitutional origin of the disease, and was firmly convinced of its local infective character, he did not employ any general or constitutional medication, but relied solely on local remedies. He depended chiefly upon complete eradication of diseased structures by the use of the hot iron, and dwelt in detail upon the method of securing this without destruction of the secreting tissue. Subsequently he recommended various applications according to the requirements of the case.

In the use of the hot iron he strongly expressed the necessity for employing remedial measures beyond the apparent limit of the disease, for unless this were done the chance of a cure would be remote.

With reference to allied morbid processes he did not include thrush, because he thought it was an essentially different character of morbid process from that which characterised the others.

The majority of practitioners recognised a similarity in nature between canker and grease, some even going so far as to say they were identical in origin and nature. He, however, was not of that opinion, for although he had seen canker and grease co-exist, and the former to appear subsequent to the latter, he had never seen canker show the least indication of extending into grease, even when the coronary substance was markedly involved. Furthermore, heredity seemed to play a more distinct *rôle* as a predisposing factor in the production of grease than of canker. Unfavorable hygienic circumstances were also a predisposing influence. Having described the symptoms, he said that in the early stages thorough cleanliness and astringent applications were generally sufficient to eradicate it. In the later stage the most effective remedy was that recommended by Professor Williams, namely, to cut off the exuberant grapes with a thin, sharp, hot iron, and thoroughly scrape the surface, using the requisite care to avoid destruction of the corium.

He thought seedy toe was allied to canker because they had in it an abnormal condition of the hoof horn which seemed to depend upon its infective property, as indicated by its persistent propagation and extension. In seedy toe there was an uncementing of the union between the wall horn and the horny laminæ. Although seedy toe was a curable affection no cure was effected without employing radical measures. Some cases were cured by scraping out all the crumbly, mealy horn, antisepticising the parts with carbolic acid, dilute nitric or hydrochloric acid, and filling up the space with hot tow and tar, pitch and resin, or gutta percha. If any particle, however, of the mealy horn were left, the process continued and gradually extended, and the only radical cure was to remove the wall horn and thoroughly clear out all mealy material, a proceeding which might be rendered all the more effectual by subsequently lightly touching the affected portion with a hot iron.

As regarded specific coronitis, the name by no means conveyed the exact morbid condition to be deseribed, since the deep part of the coronary band did not seem to participate in any marked degree in the process. In this condition there was an undoubted infective process involving the keratogenous surface of the coronary band, the keratogenous surface of the ergots, and the corresponding surface of the chestnuts. He described the symptoms, and said the treatment was precisely similar to that for canker.

A discussion followed, in which Messrs. W. Carless, Beddard, Coe, Huband, J. R. Green, Merrick, Horton, Bower, Stanley, Gooch, and the President took part. Mr. Malcolm replied.

H. J. Dawes, *Hon. Sec.*

THE CENTRAL VETERINARY MEDICAL SOCIETY.

An ordinary general meeting of this Society was held on Thursday night, the 6th ult., at the Royal College of Veterinary Surgeons, 10 Red Lion Square, Bloomsbury. Mr. S. Villar, the president, occupied the chair, and the other Fellows present were Messrs A. L. Butters, J. K. Bruce, Jno. A. W. Dollar, H. Edgar, Thos. C. Garry, J. S. Hurndall, Prof. F. Hobday, F. W. Kendall, Geo. C. Lowe, F. C, Mahon (hon. sec.), Joseph H. Manton, Prof. J. Macqueen, Messrs. A. Prudames, G. E. O. Reddish, H. G. Rogers, W. Roots, J. E.

Richards, F. G. Samson, H. M. Singleton, P. Vincent, F. O. L. Walpole, F. W. Willett, W. H. Williamson; and among the visitors were Spooner Hart, Esq., M.R.C.V.S.

On the motion of Mr. A. L. Butters, seconded by Mr. H. G. Rogers, the minutes of the preceding meeting were taken as read, and were confirmed.

The *Hon. Secretary* (Mr. F. C. Mahon) intimated that he had received communications from Mr. W. Hunting, Mr. J. Roalfe Cox, and Mr. C. Sheather expressing regret because of their inability to attend.

New Fellows.—A ballot euded in the unanimous election of the following gentlemen as Fellows of the Society:—Mr. N. Almond, F.R.C.V.S., of Chelmsford, and Mr. G. Upton, M.R.C.V.S., of Priory Farm, Dartford.

British Institute of Preventive Medicine—Proposed Grant.

The *Secretary* read a circular letter which he had received from Mr. A. W. Hill, secretary of the Royal College of Veterinary Surgeons. (See *ante*, p. 329.)

Mr. A. Prudames.—With your permission I should like to say a few words on this subject, and ask you to consider a resolution which I will move. This matter, as you are aware, has been brought before us on more than one occasion, and there appears to have been a great division of opinion as to what should be done, how it should be done, and when it should be done. You will remember that some time since "the veterinary profession" was practically ignored by the promoters of this Institute. That being so, it was thought then that we should ignore the Institute. Now I am pleased to note that our profession is no longer ignored. They have, as you are aware, placed one of our number in an active position in the Institute, and, as stated to us by Dr. Ruffer at our last meeting, he is doing really good work. Under those circumstances we as a profession, although in a small degree, are acknowledged and are placed in a position which enables us to show that we are of some use. Hence I think it behoves us to manifest our good feeling and good wishes towards "The British Institute of Preventive Medicine" by subscribing to it what we reasonably and fairly can afford, having regard to the various claims made upon us and the amount of funds at our disposal. I take it for granted that we have no wish to keep a very large nest egg, although the possession of a nest egg is always of value to a society as to an individual, and gives one a standing. I beg to propose—"That our Secretary be requested to reply to this letter, stating that this Society is prepared to give twenty-five guineas as a donation to the British Institute of Preventive Medicine."

The *Chairman.*—Allow me to say that Rule 25 of this Society will not admit of the motion being framed in that way. We can only recommend the Council to grant the money.

Mr. J. S. Hurndall.—I should like to ask Mr. Prudames this: What advantage may we expect in return for this twenty-five guineas? Personally I do not see any utility in handing over that sum out of a balance of £61 odd which we have at our disposal unless we know that we are going to get something in return. Are we to make this grant merely for the sake of tacking ourselves on to the tail of the medical profession? If so, I think the money could be better disbursed in being voted to some fund to be established in connection

with our societies for doing work of this description ourselves—I mean such special work as this Institute professes to do or aims at doing. Plenty of good men in our own body would come forward to undertake the work. Personally I have no sympathy with this proposed grant to the British Institute of Preventive Medicine. I have never been able to learn yet what they propose to do, nor how they intend to use any money that may come from our profession.

Mr. H. G. Rogers.—I am somewhat of Mr. Hurndall's opinion. I do not think we are rich enough to make a sort of benevolent fund of this Society. I do not know whether it is generally known, but something like £5000 has been given by individuals to this British Institute of Preventive Medicine. Like Mr. Hurndall, I should very much like to know, before we entertain this motion, something of the scope and object of this Institute: what sort of good we are going to derive from it!!! It is in my memory that when we are associated with medical gentlemen in any particular movement, we do not take a front seat. If anyone here is able to afford me any information as to the work undertaken by this Institute, I shall be very grateful to him if he will enlighten me. There is another matter, however, down on the agenda relative to the proposed Jubilee Memorial, which touches us more nearly than the British Institute of Preventive Medicine. Our balance of £61 is not very large, and we should not touch our invested funds for subscriptions.

Mr. Prudames.—I have no special information concerning this Institute, only that which has appeared in the veterinary and other journals. At the same time I do feel that we, as a profession, ought not to be entirely out in the cold in this matter. We ought at least to show a front equal to our position. We cannot aspire because we are not a wealthy body of men like the medical profession; and, in my opinion, we cannot and never shall be thoroughly and completely their equal. But there is no reason why we should not do our best. I may add that if individually any members of our profession are able further to help this Institute, and to bring the body to which they belong to the front, we shall be glad, and the Institute will no doubt be thankful for any subscriptions of this description. The grant I propose is one which I regard as being within the means of this Society. By making this grant we shall make known our existence not only to this Institute, but to the public, and we must keep before the public if we would maintain the position we ought to hold. I will amend my motion as follows: "That this meeting desires to recommend to the Council of the Central Veterinary Medical Society that the sum of 25 guineas be voted to the British Institute of Preventive Medicine, and that the Secretary be authorised to reply to Mr. Hill accordingly."

Mr. Singleton.—I have much pleasure in supporting the resolution submitted to us by Mr. Prudames. I think we may be congratulated on deeming the subject of sufficient importance to occupy our attention this evening. The founding of the British Institute of Preventive Medicine is an event of national importance, and constitutes an epoch in the history of British medicine; the promoters are to be congratulated on having succeeded in removing a stigma which for long attached to medical science in this country; and seeing that the greatest advantages to public health may be expected to be derived from the institution, it seems almost incredible that it should yet be allowed to remain in the singular, the anomalous, the unaccountable position of being wholly unsupported by parliamentary

aid; and considering the magnitude of the undertaking, the difficulties to be overcome, the ignorant prejudice and silly sentimentality which exists in certain quarters, the enormous outlay, £100,000 being the sum required, it is not to be wondered at that the medical profession should have taken the lead in the matter. But although they have taken the lead, there is no reason whatever why we should remain altogether behind. The objects of the institution and the purposes for which it will be based, namely, the study of infectious diseases and the best means of resisting them, are of vital interest to the veterinary profession, and therefore it behoves us to support it. Nor do I think it a question of what we shall be given in return. I venture to think that is not precisely the point at issue this evening. If we avail ourselves of the opportunities which the British Institute of Preventive Medicine offers to us, and take up research work there, you may depend we shall get exactly what we deserve, for it rarely happens that any valuable scientific work is consigned to oblivion. Pathology being as much dependent on veterinary medicine as on human medicine, and they having their place and we having ours, let us join them in this object—the advancement of science.

Mr. W. Roots asked whether, in the event of their Secretary writing to Mr. Hill telling him that the Society had passed a resolution recommending the Council to grant 25 guineas to this Institute, the hands of the Council would not thereby be bound.

The *Chairman.*—Not at all.

Mr. Hurndall.—Suppose, after the letter is dispatched to Mr. Hill, the Council do not adopt the recommendation—and they have the right to reject it.

Mr. Roots.—Does it not rather bind the Council, writing to Mr. Hill to tell him that the Society have recommended them to grant this sum?

Professor Macqueen.—It was unfortunate to introduce the name of Mr. Hill at all in this business. We have nothing to do with him.

Mr. Prudames received permission to amend his resolution by simply limiting it to a recommendation to the Council to grant 25 guineas for the purposes of the British Institute of Preventive Medicine.

As amended the resolution was carried by 17 votes against 4.

On the motion of *Mr. F. G. Samson*, seconded by *Mr. Roots*, the Secretary was instructed to write Mr. Hill, for the information of the Council of the Royal College of Veterinary Surgeons, that the subject of his letter was under consideration.

Grant to the Jubilee Fund.

Professor Macqueen explained the initiation and progress of the movement for commemorating in a befitting and permanent manner the efforts of those who were instrumental in obtaining the first Charter of Incorporation of the Royal College of Veterinary Surgeons in 1844. In July last the Council of the College, on the motion of Mr. R. C. Trigger, voted a sum of not less than £50 as the nucleus of a Jubilee Memorial Fund. A committee was appointed to carry out the object, and at its meeting in August last appointed Mr. Trigger as its chairman, Mr. Wragg as its treasurer, and himself (Professor Macqueen) as honorary secretary. A circular inviting co-operation was issued to all the members of the Council of the Royal College, to the principal Army veterinary surgeon, to

the principals and professors of the different teaching schools, the presidents and secretaries of the veterinary medical societies, and to the veterinary officers of the Board of Agriculture. Favorable replies were received from a majurity of those to whom the circular was sent. The enlarged committee comprised (1) all the members of the Council of the R.C.V.S., with the exception of two or three gentlemen who were unable to devote sufficient attention to the work. Secondly, with the exception of Professor Walley, the principals of all the schools had joined the committee. Professor Walley, he (Professor Macqueen) was sorry to say, was too ill to take part in any movement whatever. Had his health permitted, no member of the teaching profession would more gladly have lent his aid to that movement. All the professors of the teaching schools —every veterinary teacher—had consented to assist in the project. A large majority of the presidents and secretaries of the medical societies had also agreed to act, as had also Professor Brown, C.B., and Mr. Cope, of the Veterinary Department of the Board of Agriculture. As yet he had not heard from the principal veterinary surgeon of the Army. The committee thus augmented met the previous week under the presidency of Mr. Trigger, when it was decided that the memorial should take the form of a scholarship or bursary, to be called "The Charter of Incorporation Scholarship or Bursary." That was the main recommendation of the Committee which the Council of the Royal College of Veterinary Surgeons adopted at its meeting held subsequently the same day. Subscriptions were now invited from societies and individual members of the profession. How the scholarship or bursary was to be awarded would depend upon the amount subscribed. In addition to the £50 which the Council of the R.C.V.S. agreed to give, the Midland Counties V.M.A. had subscribed £50, and other contributions had been received varying in amount from one to ten guineas. The total up to date was nearly £200. Now he (Professor Macqueen) was there that evening as a beggar on behalf of the Jubilee Memorial, and he felt that he could appeal with a far greater degree of confidence to their sympathy than had Mr. Prudames in his plea for the British Institute of Preventive Medicine. The Jubilee Memorial Fund was one which entirely concerned the veterinary profession, and they would have a voice and vote in the disposition of the money subscribed. He proposed that that meeting recommend the Council to grant 25 guineas towards the fund named.

Mr. Prudames.—May I ask whether the committee has arranged for the scholarship to be open to all the schools?

Professor Macqueen.—That is entirely a matter for the Council of the R.C.V.S. and the committee, and is not yet decided. Some suggest a post-graduate's bursary and some propose a student's bursary.

Mr. Hurndall.—I notice that in our balance-sheet there is an item of £20 called a "Jubilee Grant" which was really spent upon a smoking concert to celebrate the event. After spending £20 in this way, I think it would be unworthy of us not to give more than 25 guineas towards the scholarship or bursary it is designed to found in honour of the promoters of our first Charter of Incorporation. It may be thought that I am inconsistent because I took exception to giving 25 guineas out of our credit balance of £61 to an Institute with which I am not in sympathy. But here is an object than which a more worthy one, so far as our profession is concerned,

cannot be imagined, and I do think that after voting £20 for a smoking concert, and having regard to the fact that the Midland Counties Association has granted £50 towards the Jubilee Memorial, we cannot do less than recommend that our Council do make a similar grant. I move, therefore, a recommendation to that effect.

Mr. H. Edgar.—I have great pleasure in seconding the proposition that our Council be recommended to subscribe £50 to this most worthy object. I think it will ill befit the Central Society to be below the Midland Counties Society in this matter, and seeing that the object is one with which we are certainly in full sympathy, and one which should be supported to the utmost power of this society.

Professor Macqueen's motion not having been seconded, Mr. Hurndall's proposition was put as the original resolution, and was carried unanimously.

Morbid Specimens.

Mr. W. H. Williamson submitted for inspection a tumour removed from the abdomen of a small Scotch terrier in the course of a *post-mortem* examination. The tumour, he said, was one which involved the whole of the mesentery. The organs were healthy save the stomach and the heart, the valves of which were all affected. The most curious point in the case was the weight of the tumour, namely, 1¾ lbs. He had not made a microscopic examination of the tumour, but he should imagine from its appearance that it was carcinoma. The dog showed no symptoms of ill-health until a week prior to its death, although the tumour was known to have been forming six months before.

Mr. T. C. Garry exhibited two photographs showing lesion—intussusception of the small bowel in a horse, the principal interest attaching to the exhibit being the extent of the bowel involved, which Mr. Garry said was something like 30 feet.

In reply to Mr. Prudames, *Mr. Garry* said : I fancy the horse was about nine or ten years old.

Mr. Edgar.—I should like to ask Mr. Williamson if he found in any way a deposit in the little dog, if any of the glands were involved, and if the symptoms were exhibited by the dog. I can readily understand that a tumour of these dimensions must have been easily discoverable on external manipulation. But was there any special sickness or diarrhœa, or anything of that kind ?

Mr. Williamson.—I found no deposits except in the spleen, which is also being passed round. As to symptoms, the tumour was detected about six months before the dog died. It showed no signs of illness until a week before death, when it had sickness and diarrhœa.

Mr. Edgar.—There was never any injury to the dog known ?

Mr. Williamson.—No, never.

On the motion of Mr. Prudames, seconded by Mr. Edgar, thanks were unanimously accorded to Mr. Williamson and Mr. Garry for the morbid specimen and the photographs which they respectively submitted.

Congress of Hygiene (Veterinary Section).

The *Chairman.*—It will be in your recollection that Mr. J. A. W. Dollar was asked at a meeting of our Society to act as our special delegate to the International Congress of Hygiene and Demography held at Budapest. He has been good enough to write a report, and I will ask him to be kind enough to read it to us.

(This report appeared in our January number.)

Mr. Hurndall.—I take it that a report of this description does not come under the category of one that should be subjected to any criticism. Therefore I do not think we can do better than acknowledge our indebtedness to Mr. Dollar, who has proved so able a delegate on our behalf. With his natural modesty he referred to reasons for his selection as our delegate which may have struck him, but which never struck anyone who mentioned his name in connection with this International Congress. I am sure, without speaking in a derogatory manner of the other members of this Society, no one was so well qualified to represent it at the Congress. Without taking into account any other of his qualifications we must all recognise his great linguistic ability. Personally I feel that we are very much indebted to him for the interesting account of the proceedings which he has given us. (Hear, hear.) It was only such a report as we anticipated from him because we all know what his abilities are. I take it that I am not out of order in proposing that our hearty thanks be accorded to Mr. Dollar for his services as our delegate, and for the able, careful, and interesting report with which he has supplied us of the Congress proceedings.

Mr. O. E. Reddish seconded the motion, which was carried unanimously.

Mr. Dollar, in thanking the meeting for the compliment, disclaimed that there was any special merit in his report, or that the document might not have been written by any of his fellow-members.

The Next Meeting.

In reply to Mr. Edgar, the *Chairman* announced that at the next meeting of the Society in January Vet. Capt. Butler would read a paper on "The Legal Aspect of Soundness," and the discussion on the paper would be opened by Professor Penberthy.

The proceedings then terminated.

SOUTH DURHAM AND NORTH YORKSHIRE VETERINARY MEDICAL ASSOCIATION.

The usual quarterly meeting of this Association was held in the North-Eastern Hotel, Darlington, on Friday, December 7th, 1894, at 4 p.m.; Mr. A. Peele, president, in the chair.

There were also present Messrs. J. G. Deans, P. Snaith, and H. H. Roberts, Bishop Auckland; C. G. Hill, Darlington; J. E. Peele, Durham; G. E. Gibson, Sedgefield; and W. Awde, Stockton-on-Tees. Apologies for non-attendance were received from Professors MacFadyean and Williams, Thos. Greaves, and H. Thompson.

Mr. Peele, sen., moved, and *Mr. Hill* seconded, that the minutes of the previous meeting be taken as read and confirmed.—Carried.

The *President* moved, *Mr. Roberts* seconded, and it was carried unanimously that the best thanks of the Association be accorded to Mr. Deans for his conduct in the chair during his year of office.

Mr. Deans read an article which had appeared in an illustrated paper on Bishop Auckland and neighbourhood with reference to himself, but it was unauthorised by him, and he disclaimed all responsibility in connection therewith.

Mr. Snaith also stated that he had been waited on by the same firm who brought the thing out, but he had declined to associate himself with it in any way.

The *Secretary* reported the receipt of a newspaper from the Yorkshire Association, containing one of a series of articles which were appearing weekly in the *Leeds Mercury*. After some discussion, *Mr. Snaith* proposed and *Mr. Hill* seconded, that the Secretary be instructed to write to the other Association stating that they quite agreed with the action that had been taken by them, and they were surprised that gentlemen in the position of Professor Axe should lend themselves to work harm to the other members of their profession.

The adjourned discussion on Professor MacFadyean's paper on "Glanders" was then taken. *Mr. Gibson*, having had a case since the last meeting, informed the members of its history, progress, and development of the disease until the animal was destroyed, and also exhibited the Schneiderian membrane in spirit, which showed marked ulceration.

Mr. Roberts reported that he had recently made a *post-mortem* examination of a pit pony, the liver of which weighed 25 lbs. He also related a remarkable case in a pony which fell in the pit, and behind a certain place in the dorsal vertebræ there was no sensation at all, and the posterior limbs were paralysed, so he concluded its back was broken, and ordered it to be destroyed. Before doing so, however, the pony was turned over on to the other side, when it immediately got up and went to the manger to feed as if nothing was amiss. The pony was also sensible to pain behind the place where the supposed fracture was. It was off work for some time, but ultimately went all right, and the opinion he formed was that there must have been dislocation with pressure on the cord, and by turning the pony completely over it had been put right.

A letter was read from the Secretary of the R.C.V.S., asking what the Association would contribute towards the funds of the British Institute of Preventive Medicine; but, after discussion, it was decided to allow the matter to stand over until some more definite information was forthcoming with regard to the working of the Institute.

The adjourned discussion on Mr. H. Thompson's paper on "Parturition" was then taken, and after several members had spoken on the subject the *Secretary* stated that the President and himself had been put on the Jubilee Memorial Committee, and he hoped the members would subscribe to it.

The *President* then nominated Mr. Joseph Smith, M.R.C.V.S., Stokesley, and Mr. Henry Peele, M.R.C.V.S., Durham, as members of the Association, seconded by the *Secretary*, after which the meeting closed.

W. Awde, *Hon. Sec.*

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

The quarterly meeting in connection with the above Association was held at the Hôtel Métropole, Newcastle-on-Tyne, on Friday, November 16th, 1894. W. A. Hancock, Esq., President, in the chair. The following members were present:—Messrs. J. B. Nisbet, H. Hunter, Vet. Major Durant, J. E. Peele, A. Dalgleish, T. Lanchester, J. W. Rider, G. M. Mitchell, J. Gofton, J. W. T. Moore, A. Hunter, W. Hunter, and the Secretary, F. T. Finney.

Visitors.—Professor Williams and P. Moir, Edinburgh; Dr. George Murray, and Messrs. Peele, jun., and C. Campbell.

The minutes of last meeting were taken as read and adopted.

Election of Officers.

Mr. H. Hunter proposed, and the *Chairman* seconded, that Mr. G. M, Mitchell be elected President for the ensuing year, which was unanimously adopted. Messrs. J. E. Peele, Durham, and Mr. J. W. Rider were elected vice-presidents; Mr. F. T. Finney was re-elected Secretary and Treasurer, and Messrs. G. Elphick and A. Hunter auditors.

The *Chairman*, in calling attention to the next subject on the agenda—adjourned discussion on Mr. Thompson's paper on "Parturition"—said that Mr. Thompson was not present, and would not therefore be able to reply to any remarks that might be made. Unless there was anyone present anxious to take the matter up he thought the best plan would be to defer it.

On Tuberculosis. (Abstract of address.) By Professor George Murray, M.B.

When your energetic secretary, Mr. Finney, asked me to address you to-day upon some subject connected with the study of bacteriology, I was rather at a loss as to what subject might interest you most. After consideration I came to the conclusion that there was no disease which engaged the attention of both the medical profession and the veterinary medical profession in common so much as tuberculosis. The subject is as large as it is important, and to-day the time at my disposal will not allow me to do more than deal with a few questions which concern us both, and in the consideration of which we meet on common ground. Of the treatment of tuberculosis I shall to-day say nothing, for I feel that in the case of animals I can tell you nothing which you do not already know far better than I do. The cure of disease which has already developed is not by any means the sole duty of either the medical practitioner or of the veterinary surgeon. One of the most important duties, and I may say one of the highest privileges of both professions, is the prevention of disease, for truly "prevention is better than cure." Satisfactory and pleasing as it is to cure disease, how much better when sickness with all its attendant miseries can be prevented altogether! The importance of this comes home to us when we remember how many diseases of men and animals are due to preventable causes; and, as the Prince of Wales so pertinently remarked at the opening of the International Hygiene Congress in London, "if preventable why not prevented?" Here we meet on

common ground, for many preventable diseases which attack man are transmitted to him from the lower animals. Hence all measures which are undertaken by the veterinary profession for the prevention of the spread of communicable diseases among animals also tend to diminish the channels by which such diseases are conveyed to man. Anthrax furnishes a good example of this. For this reason I consider that all organised systems of veterinary inspection are of the highest importance to the well-being of the community at large. It is only by careful and constant inspection that the earliest signs of disease can be detected and precautions taken to prevent the spread of the disease. In tuberculosis we have a common enemy. In one form or another it is said to be answerable for one seventh of the total number of deaths which occur annually in Europe, and in domesticated animals it is also a fearful scourge. Our knowledge of the disease has increased greatly during the last twelve years, since the brilliant discovery made by Koch that tuberculosis was caused by a specific microbe, the tubercle bacillus, a bacillus which is the cause of tuberculosis of both man and animals. As a result of this discovery many forms of tuberculosis which formerly were not recognised as such have been recognised by the presence of the tubercle bacillus. The discovery has not only led to an exact and scientific classification of the various forms of the disease, but it has given us a definite test by which the nature of doubtful specimens may be accurately determined. We thus have a valuable aid to food inspection. Samples of meat are frequently submitted to microscopical examination for this reason, that the naked-eye appearances are not sufficiently characteristic to show the nature of the disease. If the microscopical examination reveals the presence of the bacilli the question is settled at once. Such examinations are, however, only necessary in doubtful cases, and require a considerable amount of time in addition to a practical knowledge of the methods of examination and the use of the microscope. A still more delicate test for the presence of the bacilli in food or milk is the inoculation test, but this requires still more time, and often no definite auswer can be given till several weeks have passed. Moreover in this country but few possess the necessary legal permission to perform such experiments.

[Dr. Murray then described the characters of the tubercle bacillus, and showed how Koch had proved that it was the true cause of tuberculosis (*a*) by demonstrating its presence in all cases of tuberculosis, (*b*) by obtaining pure cultivations outside the body on artificial media for many generations, (*c*) by reproducing the disease by inoculation, (*d*) by finding the bacillus living in the animals which succumbed to inoculation tuberculosis. He then showed that the most common channels of infection in both man and animals were (1) by inhalation of dust containing bacilli, (2) by swallowing infected food.]

In man and animals infection of the lungs often takes place from the inhalation of dried particles of the discharges from diseased lungs, which contain the bacilli in large numbers. Thus stables and sheds may easily become infected by such discharges from tuberculous animals.

In man, and especially in children, infection from milk is common, not only from milk from diseased udders, but even from milk from the healthy udder of an animal with tuberculosis in other parts of the body. A cow may also infect a calf by the milk.

Tuberculous meat is answerable for the infection of man in some cases. In animals I am unable to speak as to what kind of food may convey infection. But it appears probable that one tuberculous beast in a shed may readily infect the stall if it has any discharge from the respiratory passages, and so pass on the infection to any other healthy animal which is afterwards put into the same stall. A phthisical cowkeeper may readily infect the cows under his charge if he spits carelessly about the cowshed, so that some of the bacilli become dry and are inhaled by the cows, or are mixed with their food and swallowed. Other channels will suggest themselves to you who are familiar with the habits and management of animals more intimately than I am. What I wish especially to impress upon you is that very few human beings or animals are born with tubercle bacilli already in them; at most they inherit a predisposition—that is to say, the tissues are favorable soil for the bacilli, but that in nearly every case the bacilli gain access from outside after birth. This is the key-note of the prevention of tuberculosis. We must direct our attention to the prevention of the spread of bacilli by diseased animals, living or dead. If we succeed in doing this tuberculosis will rapidly diminish in frequency.

Wild animals are rarely tuberculous, but soon become so in confinement, not because they have grown so much more susceptible to infection, but because they have encountered the germs of the disease which they did not come across in their wild state. How can we prevent the distribution of tubercle bacilli? By careful disposal of discharges. By disinfection. No person suffering from phthisis should have charge of dairy cows, as the consequences may be so serious if he infects even one of the cows. I advocate isolation of all suspected animals, and slaughter of all which have undoubted tuberculosis. The difficulties may be great, but the end justifies the means.

Many valuable beasts succumb to tuberculosis, and in the interests of cattle-breeders alone it is advisable that the disease be stamped out by every means in our power. Even if this economic aspect of the question did not exist, when we see the amount of misery which is produced by tuberculosis, especially in the children of the poor in our large towns, the importance of such measures comes home to us.

The Danish plan of systematic veterinary inspection of all dairy cows and cattle intended for the market is most excellent. The inspection must, however, be repeated frequently. By aiding the early diagnosis of tuberculosis in cattle we may feel sure that tuberculin will be the means of saving great numbers of lives, for it is the sharpest of detectives for discovering even small tuberculous nodules lying hidden away in remote parts of the body. In this way it enables animals to be isolated and killed before they have done much harm. You know how difficult it is to recognise tuberculosis in the early stages. In man it is difficult enough, but more so, I should say, in cattle. In man the microscopical examination of the sputum is a valuable help to diagnosis; as the bacilli are often numerous when the other signs of the disease are but slight, this method might be employed in animals when the disease affects the lungs and there is some discharge to examine.

Tuberculin is a glycerine extract containing the chemical products of the tubercle bacillus. Bacilli, like other organisms and animals, form certain excretory products which in many cases are powerful

poisons. A culture of the tubercle bacilli is grown in broth, glycerine and carbolic acid are added, and the whole is filtered through porcelain to get rid of the bacilli and obtain only their chemical products. This is diluted with nine parts of 1 per cent. carbolic acid solution to one of tuberculin. When a small quantity, 40 to 80 minims, is injected into a tuberculous animal a rise of temperature takes place in from three to twenty hours. The syringe must be disinfected by washing out with 5 per cent. solution of carbolic acid or 4 per cent. of creolin in water. The injection is made behind the shoulder-blade beneath skin which has been previously disinfected. The temperature must be taken in the rectum every three or four hours for some hours before and for twenty-four to forty-eight hours after the injection, the thermometer being left in for three minutes each time. A distinct rise of 1° C. to 5° C. above the average normal temperature may be taken as evidence of reaction. When this reaction takes place experience has shown that in by far the larger proportion of cases tuberculosis is present.

It is probable that thetest is correct in more than 90 per cent. of cases, but on this point we require further statistics. On the other hand, if tuberculosis is present in an active form, the animal hardly ever fails to react. Where the tuberculous focus is small and calcareous there may be no reaction, but probably in these cases the disease has practically been cured.

When the reaction takes place in a milch cow I maintain that the cow must no longer be used for the supply of milk for human food. Bacilli taken in milk appear to be unusually dangerous, and it may be that along with the absorption of the fat in the alimentary canal the bacilli easily gain access to the mesenteric glands, for this form of tuberculosis is terribly common in children.

The question of the use of meat of tuberculous animals is a large one. Experiments show that such meat, even though healthy in appearance, may convey the disease; so that I consider such meat should only be sold with a label signifying that it was from a tuberculous animal. This will allow the public to buy with open eyes, and to take especial care in cooking such meat. If such meat is cooked with care I believe the danger of infection is minimised, for tubercle bacilli are easily destroyed by heat. Boiling rapidly destroys the bacilli, so that milk can be sterilised by boiling for a miuute.

We must not, however, be content with these precautions only. The sheds which have been occupied by diseased animals must be disinfected before others are allowed to use them. All parts must be washed, sprayed with perchloride of mercury solution, then thoroughly whitewashed, and as much fresh air and sunlight admitted as possible.

This question of tuberculosis is one of pressing importance, for if not attended to the disease will become more frequent. The cases of unsuspected tuberculosis are common in England. Of this we gain a fair idea by the number of animals which, when slain because exposed to contagion of pleuro-pneumonia, turn out to be tuberculous. Such animals are supposed to be healthy, and are killed because they may be in the incubation period of pleuro-pneumonia. In Professor Brown's report to the Board of Agriculture in 1892 we find that in London 25 per cent. of such animals were tuberculous; in Midlothian 20 per cent., in Yorkshire 22·8 per cent., in Durham 18·7 per cent. Tuberculin was found to be reliable test in 90 per cent. of the cases.

In America, in the State of New York, three veterinary inspectors were recently appointed to go through each county to examine the herds and to kill infected cattle. They first made a physical examination. If the presence of the disease was suspected tuberculin was injected. If a reaction took place the animal was killed. Partial compensation is made by the State to the owners. During last year these inspectors examined 20,000 animals; 686 were found to be infected and were killed. No mention is made of testing apparently healthy herds with tuberculin.

In Denmark the tuberculin test only failed in 2 per cent. of the cases. The Government made a grant of 50,000 crowns for the expenses incurred by the tuberculin tests throughout the country. In Denmark if an animal reacts to the test it is fattened for the butcher. The meat after inspection is branded with a special stamp, indicating that the animal has suffered from tubercle, and the public are cautioned that it must be well cooked. In one case Professor Bang found that 80 per cent. of the cattle in one herd were infected.

In England all herds of cattle, and especially all dairy cows, should be inspected at regular intervals by special veterinary inspectors, who should be empowered to employ the tuberculin test whenever they deem it advisable; in fact, all milch cows should be tested with tuberculin at each visit, even though they may be apparently healthy. If a milch cow reacts it should be isolated at once and the milk no longer used for food, and the shed must be disinfected. Meat from tuberculous animals should be boiled thoroughly at the slaughterhouse, and sold with a special mark upon it. Compulsory notification of the disease to the sanitary authority is necessary also to ensure the efficient carrying out of the precautions. Whatever loss is incurred by the owner should be made good by the State, for the State as a whole benefits greatly by the decrease in the frequency of tuberculosis.

After an interesting discussion, in which the Chairman, Professor Williams, Mr. Hunter, Mr. Moore, Mr. Gofson, and Mr. Peele took part,

Professor Murray replied with regard to the heredity question which had been dwelt upon by a good many speakers. He was afraid he had not made himself quite clear. What he wished to convey was this—that the actual disease is not often hereditary. It certainly is sometimes, but what he maintained was that such cases were not common. Professor Williams had put the point well in the cases mentioned by him. There was probably something in the tissue which made it suitable soil for the disease, but he thought it hardly possible for the father to actually transmit the tubercle bacillus. He thought that must be of rare occurrence, and he thought that, as Professor Williams put it, there must have been a predisposition to the disease. That was what was inherited in many cases, and the infection takes place afterwards. Another point in favour of his view was this. As Professor Williams mentioned, the disease is rarely seen in very young animals. If an animal was born with the disease in it, it would show it in the first month. If it does not it is evidence that the infection must have occurred after birth. He was very much interested to hear the last remark of the Chairman as to cows often going into a rapid decline after calving, because it was a well-known fact that among human beings the same thing happens. He was also much interested to hear of the cases of horses fed on tuberculous milk developing

tuberculosis. That is rare. The fact of them taking it from the milk he thought showed that there was something in the milk that rendered it particularly virulent. As to what Professor McFadyean said about children being affected with tuberculosis, he would reply by saying he thought that about one third the cases he had examined were cases of tuberculosis. He was very glad to hear Mr. Moore's remarks about stopping the traffic of "wasters" from Denmark. He thought that they all owed a debt of gratitude to Mr. Moore for his efforts in that direction. As to the exact steps to be taken with a tuberculous animal found in a byre, he did not know what the actual state of the law with regard to that was, but he certainly thought that the animal should be removed, the byre disinfected, and the animal killed if necessary. No milk that came from it should be sold. It was true that when the milk was diluted with other milk it was less virulent, but they had to remember this. Suppose there were seven cows in a byre, one of which was tuberculous, if the milk from that cow were kept to itself only a few people perhaps would drink it; but should it be mixed with the milk from the others it would be spread over a large number of people, though in a less virulent form. As Mr. Peele had said, what was wanted was something to kill the bacillus without injuring the animal. That was certainly what they were looking for. In conclusion he must thank them for the very kind way in which they had received what was a disjointed paper, and he was very much obliged to them for discussing the points he had raised so thoroughly.

Professor Williams proposed a vote of thanks to Professor Murray for his able paper. He thought that both himself and his friend from Edinburgh had been rewarded for their long journey. For medical gentlemen to read such papers as this at their meetings was very beneficial, and they should do all they could to assist the other profession.

Mr. Hunter seconded, remarking that more of them should attend the classes over which Professor Murray presides at the Durham College of Medicine. They could not do better than go and make themselves conversant with the study of bacteriology.

Mr. Moore, supporting, said they stood on similar grounds to the other profession—the great object of both was not so much to cure as to prevent disease.

Professor Murray replied, and said a warm welcome would be extended to any of them who wished to take up the study of bacteriology at the University of Durham College of Medicine. They hoped in time to have more accommodation there for the study of large animals.

The Retiring President.

Mr. Hunter proposed a vote of thanks to the retiring president. This was the last meeting, he said, when they would have the pleasure of seeing him in his official capacity. They were all sorry he was leaving the district, for he had always been a pleasant professional brother to meet. He had been a very able president, and he hoped they would often have him among them again.

Mr. Mitchell seconded. From a selfish point of view he was sorry that Mr. Hancock was going, for he was saddled with his duties during the next twelve months.

The vote was heartily carried with acclamation.

The *President*, returning thanks, said he would like to reassure Mr. Mitchell by telling him that when he took office twelve months ago he thought he would not get through it, but Mr. Mitchell would find that they had such a good secretary in Mr. Finney, and such a good Corporation, that the duties of the office were made very light indeed.

After the meeting several members sat down to a complimentary dinner to Mr. Hancock, prior to his leaving for his new residence in the south, and a most enjoyable evening was spent.

F. T. FINNEY, *Sec.*

THE NATIONAL VETERINARY BENEVOLENT AND MUTUAL DEFENCE SOCIETY.

THE seventeenth general and fourth annual meeting of the above Society was held at the Grand Hotel, Aytown Street, Manchester, on Thursday, December 6th, 1894; Peter Taylor, Esq., the President, in the chair. *Present:*—Messrs. Geo. Morgan, W. A. Taylor, A. Lawson, T. Hopkin, E. Faulkner, H. Ferguson, H. D. Chorlton, A. W. Mason, J. H. Carter, J. B. Wolstenholme, R. C. Trigger, and the Secretary.

Minutes of the last annual meeting were read and confirmed.

Letters of apology for non-attendance were read from Professor W. Williams, R. S. Reynolds, H. Thompson, J. E. Scriven, Wm. Maynard and Son, H. G. Goodall, J. Abson, W. Carless, C. Blackhurst, and A. J. MacCallum.

A letter was read from the Central Veterinary Medical Society asking if the above Society was prepared to consent to an alteration of its basis, with a view of separating the benevolent from the defence objects of the Society. It was resolved that no alteration be contemplated, as we had not sufficient grounds for so doing.

A letter was also read from the Secretary of the Royal College of Veterinary Surgoons asking if we had a desire to subscribe to the British Institute of Preventive Medicine. It was resolved that while sympathising with the object in view we have no funds to draw upon for any such purpose.

The *President* then addressed the meeting. He was very pleased to meet the members once more, and to preside at the annual meeting. He very much regretted the unavoidable absence of his old friend and so long a colleague, Mr. T. Greaves, through illness; he did not remember a general meeting in which he had been absent before that day, and he hoped he would soon regain his health and strength. The past year had been one of joy to the executive, having had no cases to defend in court of law, but they have had a good deal of work, having some five or six cases to give advice upon, only one of which required settling, which was done very amicably to all parties concerned. He hoped the Society would continue in its good work.

The *Secretary* said he had pleasure in being able to give a satisfactory report of this Society. Its need and usefulness are becoming more apparent every year; besides receiving application from members, we have many from non-members and relatives of same, seeking

advice and help. The former we can give, but not pecuniary assistance, as we are precluded by our rules from doing so. I would singly advise all members of our profession to join such a useful society. I cannot for one moment understand the apathy or indifference of a great number of our profession. Why do they not join a society which offers such substantial assistance when needed for the small sum of 10*s.* 6*d.* per annum, and where, if they do not require it, they would have the satisfaction of doing some little towards the relief of those who are not so fortunate as themselves, also to the fatherless and widow? I am sorry to report the death of our old and esteemed member Mr. J. B. Taylor, who was elected a member of Council at the last annual meetlng. His loss we deeply deplore. You will be pleased to learn that Professor W. Williams, of the New Veterinary College, Edinburgh, has kindly accepted a nominee of this Society to a free studentship. During the last three years we have enrolled 47 new members. Members on the books at the present time 159.

Mr. Greaves, in presenting the financial statement for 1894, said he had great pleasure in announcing the continued success of each branch, a larger increase of members (twenty during the year), and also in the amount of subscriptions, there being £18 8*s.* 6*d.* more than in 1893. During the year we have had several applications for assistance in cases of great need, but unfortunately for them they had failed to become members; they therefore had no claim upon our funds.

We have also had before us several claims made upon our members; the Council has been called together, and the merits of the case carefully and dispassionately considered, and if found to be such as could not be defended, we have rendered personal assistance in arranging matters between plaintiff and defendant, and in such cases the fairness of the terms agreed upon has in every case been so satisfactory that the business friendship and reputation of one member has been established.

Benevolent Fund.

	£	*s.*	*d.*
Amount of Dividend received 1894	102	19	10
Cash in hand and bank, December, 1893	336	8	2
(Half-year's interest to be added, December 29th, 1894.)			
,, in Birkenhead Docks	1900	0	0
,, in Manchester Corporation	900	0	0
	3239	8	0

Defence Fund.

Subscriptions, 1894	107	14	0
Cash in bank and in hand, December, 1893	337	18	10
(Half-year's interest to be added, December 29th, 1894.)			
	445	12	10

The whole of the expenses for 1894 being £8 9*s.* 8½*d.*

On the 17th of April, 1894, the books and accounts were carefully audited by Mr. Pownall, accountant, and Mr. Wolstenholme, V.S., who were appointed at the annual meeting; they found the books and accounts perfectly correct. On the following day they met two

of your trustees at the District Bank, and inspected the deeds and vouched for their correctness.

The following officers were appointed :

President : Mr. Peter Taylor, Manchester.
Vice-President : Mr. Geo. Morgan, Liverpool.
Treasurer : Mr. Thos. Greaves, Manchester.
Secretary : Mr. Sam. Locke, Manchester.

Members of Council : Messrs. J. S. Carter, E. Faulkner, T. Hopkin, John Lawson, A. W. Mason, R. S. Reynolds, J. E. Scriven, W. A. Taylor, H. Thompson, R. C. Trigger, W. Williams, F. W. Wragg.

Auditors : Mr. Pownall, of Messrs. Butcher, Litton, and Pownall, and Mr. J. B. Wolstenholme, V.S., of Manchester.

Mr. Hopkin suggested that the attention of the Council be drawn to the large amount of funds in bank and in hand, as to the desirability or not of investing same.

Mr. G. MORGAN proposed, and Mr. W. A. TAYLOR seconded, the proposition that in future a copy of the balance-sheet be forwarded to each member. Carried.

It was proposed that the Secretary write a letter of condolence to Mr. Thos. Greaves in his sickness, and to express the hope that he would soon recover his usual health.

A hearty vote of thanks was given to the retiring officers for their services during the past year, and to the President for presiding.

SAM. LOCKE, *Hon. Sec.*

Army Veterinary Department.

Extracts from 'London Gazette.'

THE undermentioned Veterinary Lieutenants to be Veterinary Captains. Dated 10th December, 1894.

George C. V. Fowler.

John A. Meredith, F.R.C.V.S.

YEOMANRY CAVALRY, ROYAL WILTSHIRE (P. W. O. Royal Regiment).—Veterinary Lieutenant F. P. Bennett resigns his Commission. Dated 12th December, 1894.

January 1st, 1895.

THE Queen has been graciously pleased to make the following promotion in, and appointment to, the "Most Eminent Order of the Indian Empire :"

To be Companion : Veterinary Captain J. A. Nunn, D. S. O., principal, Veterinary College, Lahore.

ARMY VETERINARY DEPARTMENT.—Veterinary Major W. Gladstone arrived from India after completion of tour of service, and is posted to 4th Hussars, Aldershot.

Veterinary Captain E. E. Bennett is transferred from Aldershot to Limerick.

Veterinary Lieutenant E. J. P. Barry from Aldershot to Woolwich.

Veterinary Major J. W. Evans has been transferred from Weedon to Aldershot.

Veterinary Lieutenant W. F. Shore from Aldershot to Newbridge.

Veterinary Lieutenant F. Eassie embarked for India on 23rd ult., to complete tour of service.

Veterinary Lieutenant H. A. Sullivan has been granted an extension of four months' sick leave of absence.

ROYAL COLLEGE OF VETERINARY SURGEONS.

Examinations in London.

The Written Examination in the various classes was held on December 10th in London at the Examination Hall of the Royal College of Physicians and Surgeons, Victoria Embankment, and the Oral Examination at a meeting of the Court of Examiners held at 10, Red Lion Square, on and between December 11th and 13th, 1894; and the Practical portion of the Final Examination at the Royal Veterinary College, Camden Town, on and between December 12th and 14th, 1894.

The following Students passed their *Final Examination:*

Messrs. C. Coole, W. J. Foreman, A. H. Towne, H. L. Roberts, H. Walpole, W. James, J. E. Porrett, C. A. A. Ewin, F. F. G. White, H. Bowker, J. W. Baxter, A. H. Clapp, T. J. Frost, S. Pennington, H. Reynolds, A. P. Calastreme, B. Franklin, G. W. Freer,* T. K. Henton, T. E. Jones,* E. M. Jarvis, H. E. T. Mason, F. C. Robertson, H. Sturge, F. Thornton, and W. A. Wood.

The following Students passed their *Second Examination:*

Messrs. J. H. Burnett,* F. W. Cox, A. J. Curtis,* G. Conder,* W. Dennington, H. B. Eve, R. Gilbey, T. S. Grove,* W. C. Gillam,† A. H. Grimes,* J. P. Heath, T. B. Hodgkinson,† J. Hughes,* R. J. Houston, W. J. Heley, R. Hudson,† O. Johnson, S. W. Jones,† W. Mulvey, R. C. Mathews, J. S. Pike, C. Peirce,† R. Platt,* S. W. Pratt, J. Pugh, B. Sumner,† E. Stanley,* R. D. Thomas,* G. Watkins,† C. E. Wells,† J. L. Webb,† H. H. Worrow,* W. Wordley,* and H. W. Youngs.*

The following Students passed their *First Examination:*

Messrs. W. H. Anderson, R. Brennand, R. W. Carless,* T. Elliott,* E. T. Ensor, E. Fenner, E. T. Goodall, F. C. Hobbs,* A. S. Head, A. T. Hine, A. Hudson, G. P. Knott, J. W. Oakley, C. M. Park,* J. B. Walker, W. M. Williams,* and B. Youngs.

Arthur W. Hill,
Secretary to the Board of Examiners.

Examinations in Scotland.

At meetings of the Board of Examiners held in Glasgow and Edinburgh on December 10th for the Written Examinations, and on and between

---

* Marked thus, passed with Second-class Honours.
† Marked thus, passed with First-class Honours.

December 17th and 21st for the Oral and Practical Examinations, the following gentlemen passed their Final Examinations, and (with the exception of Mr. D. Campbell, who will not be of age until April 4th, 1895) were admitted members of the Royal College of Veterinary Surgeons.

Glasgow College.—Messrs. D. Brown, J. Gorman, A. Hart, D. Houstoun, J. Hill, J. H. Wilson, H. McCartney, and A. McDougall.

Dick College.—Messrs. T. J. Batty,* D. Campbell,† G. Chater, W. Hewitson, H. C. Jagger, J. Miller, D. Morrison, J. A. Matheson, J. McArthur, L. McLaren, J. McMaster, A. W. Oxenham, T. W. Rudd, E. R. Sherron, R. J. Stordy, A. H. Stephenson, T. Smith, and J. E. Young.

New College.—Messrs. P. Abson, J. P. Byrne, F. L. Blakemore, H. W. Deakin, L. Farr, S. Fenny, F. W. Hall, J. R. Hamilton, R. C. Moore, W. A. Pallin,* E. Plant,* C. L. Smith, G. Thornton, A. Waller, W. Webster, J. H. Wright, and J. H. Yates.

The following gentlemen passed their *Second Examination:*

Glasgow College.—Messrs. J. Brown,* W. N. Campbell,* R. McDonnell, H. MacVean,† J. McLean,* R. Mitchell,† W. Neilston, A. B. Sullivan,* and G. Thompson.†

Dick College.—Messrs. W. V. Allan, W. T. Aulton, R. Barker, M. Bray,* R. C. Brayne,* J. Caldwell, W. H. Campsall,* J. H. Carr,* H. Conyngham,* W. T. Casewell, P. M. Edgar,† J. C. Heather, S. W. Haffield,* W. Russell,† H. W. Robson,* T. H. Sherlock,* W. Scott,* A. Sellers,* A. C. Smart, and J. Walker.*

New College.—Messrs. G. C. Baker,* J. Bibby, J. Brittlebank,* H. Cameron, J. Duff,* A. Ferrens,* B. Holmes,* W. F. Hughes,* J. Kenyon,† J. Lyons,* T. Ryan,* and J. M. Walker.*

The following gentlemen passed their *First Examination:*

Glasgow College.—Messrs. J. W. Conchie, J. C. Erskine, J. Forwell, A. Fraser, P. McKinlay, R. Peddie, and R. Porteous.

Dick College.—Messrs. J. Atkins, R. C. Baxter, A. G. Blackwood, W. J. Coffey, J. Dalrymple, J. Dixon, T. Boyle, C. Farrar, E. Lander, T. Loughran, A. G. McGown, F. Moore, J. O'Brien,* E. C. Orton, and A. F. S. Jackson.

New College.—Messrs. G. Barras, J. C. Blake, H. Briggs, H. Brittain, J. S. Drabble, and J. Knowles.

R. Rutherford, F.R.C.V.S.,
Secretary to the Board of Examiners.

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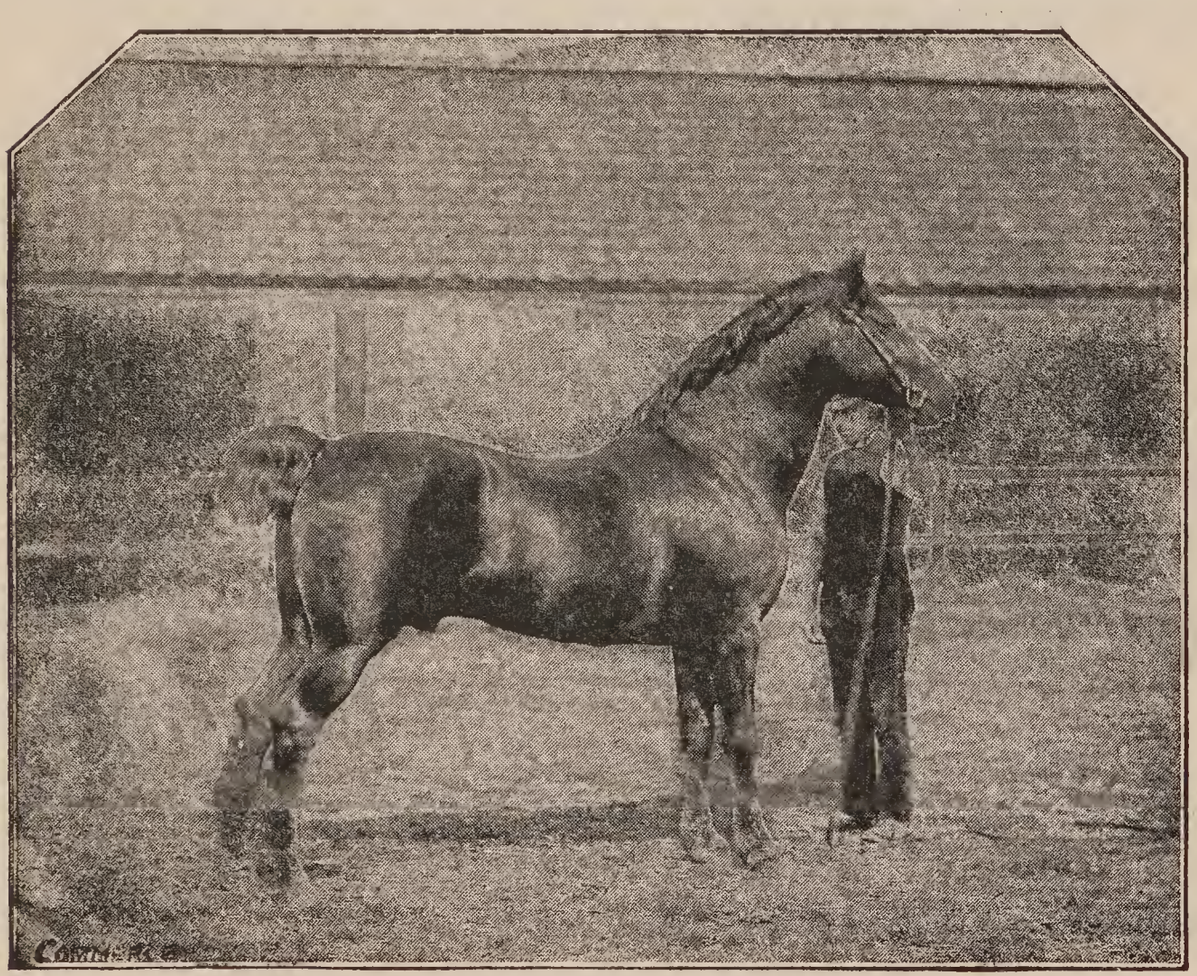

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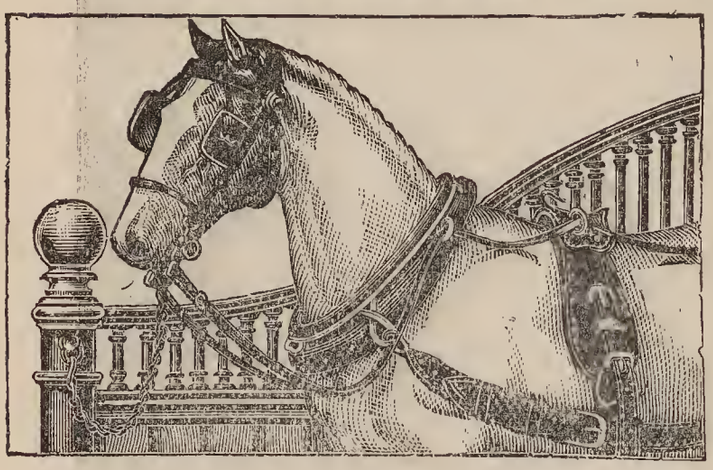

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Jeyes' Perfect Purifier.

The representatives of Messrs. Jeyes' sanitary compounds send us a notice of some of their latest preparations for veterinary use. The base of these disinfectants is creolin emulsified by the addition of certain bases, and so treated that on proper dilution with water a milky fluid is obtained possessing very powerful disinfectant and antiseptic properties, but producing no irritation. Jeyes' disinfectants are well known in England, and under the title of Jeyes' Creolin and Cresyl Jeyes, also enjoy a wide popularity abroad. We have ourselves used them in practice, and value them very highly.

Offord's Elbow Pad.

The maker of this pad, which has now been before the veterinary public for some time, and received very favorable notice, has recently improved it in several details. Its advantages are not confined to preventing enlarged elbows, but there is no doubt that in certain cases constant use of it produces diminution of already existing swellings. Practitioners having cases of capped elbow under treatment would do well to give it a trial.

Notices to Correspondents.

To ensure the publication of communications in the coming number they should arrive by the 15th of the month.

Letters, Articles, Reports of Cases and of Veterinary Meetings, should be addressed to THE EDITORS, 'VETERINARIAN,' ROYAL (DICK) VETERINARY COLLEGE, CLYDE STREET, EDINBURGH.

The Editors do not hold themselves responsible for the sentiments expressed by contributors, nor can they undertake to return rejected papers. They will be happy to advise and assist as far as possible, by letter, correspondents who may desire information regarding cases, instruments, or books.

Communications have been received from Messrs. W. Awde, F. T. Finney, R. Rutherford, F. E. Place, Patrick Walsh, T. D. Lambert, "A New Subscriber," Dr. A. J. Haslam.

JOURNALS, MAGAZINES, NEWSPAPERS, ETC., RECEIVED.

La Clinica Veterinaria. Revue Vétérinaire. Annales de Médecine Vétérinaire. Recueil de Médecine Vétérinaire. Oesterreichische Monatsschrift für Thierheilkunde. Zeitschrift für Veterinärkunde. Berliner Thierärztliche Wochenschrift. Schweizer-Archiv für Thierheilkunde. American Veterinary Review. The Journal of Comparative Medicine and Veterinary Archives. The Lancet. The British Medical Journal. Bulletin of the Johns Hopkins Hospital. Liver Disease among Calves (Report of Investigations, Cape Town). *Investigations concerning Swine Fever* (Bureau of Animal Industry, Washington). *Agricultural Students' Gazette. Agricultural Journal* (Cape Colony). *Live Stock Journal. Horticultural Review. The Field.*

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Owing to the increase in circulation of the *Veterinarian*, and the growing demands on advertising space, it has been found necessary to slightly raise the rates for advertisements.

Orders for ADVERTISEMENTS should be forwarded on or before the 22nd of the Month, addressed to the Printers, ADLARD AND SON, 22½, Bartholomew Close, London, E.C., and must be accompanied by a Post Office Order made payable to them at the Chief Office, London.

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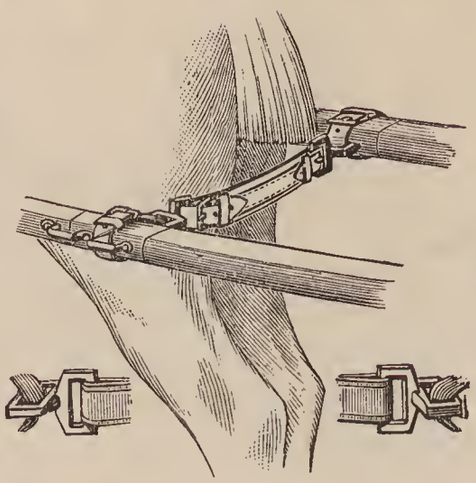

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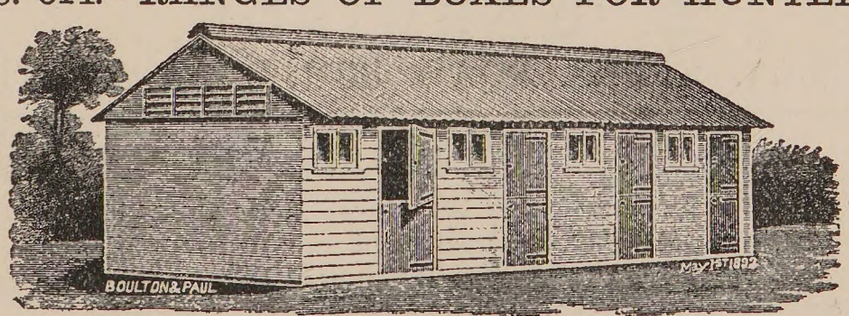

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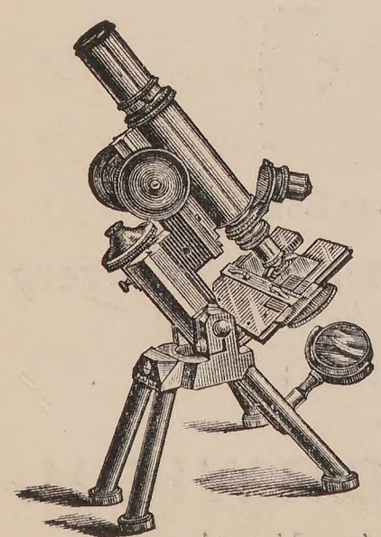

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